

SPEECH CORRECTION

Principles and Methods

increase it, and so the foundations of many severe personality disorders are established.

Reactions of educated adults to the handicapped. In more educated adults the most common malreactions to abnormality are pity, embarrassment, overprotection, exclusion, and fervent pronouncements of the "Pollyanna" attitude. A pitying glance from a well-meaning adult has helped to brand many a cripple, an extremely obese person, or a stutterer as a defective. In the vivid story *The Whistler's Room*, by Paul Alverdes,³ we find a realistic description of the difficult adjustment the laryngectomized soldiers had to make to the overly solicitous visitors who came to the hospital. When the soldiers were alone, it was relatively easy to learn to accept the squeaky substitutes for voice which their throat operations had forced them to use. But when outsiders came to sympathize and gave the unsolicited alms of pity with an erroneous interpretation of the handicap, the soldiers utilized many devious means for escaping association with them. Some very intelligent people are so embarrassed at the sight of a conspicuous difference that they can react only by looking away from the afflicted person or by indulging in an artificial laugh. Either technique is easily interpreted by an intelligent abnormal, whose experiences with society have made him hypersensitive to the reactions which that society exhibits toward him. A teacher who obviously excuses a severe stutterer from recitation in the hope of saving him from embarrassment often only increases the stutterer's feeling of difference. In such a manner, excessive pity, embarrassment, overprotection, or a lack of understanding in intelligent adults can generate as much insecurity in a handicapped person as the more vicious techniques.

It must be recognized, however, that our present society

³ Alverdes, Paul, *The Whistler's Room*, New York, Covici, Friede, Inc., 1930.

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Their symptoms are frequently less dramatically obvious than those of the blind or crippled, and yet they may suffer just as much as the others from the torments and rejections of a society which does not understand them. Of the one and a half million speech defectives of school age, less than 60,000 are receiving even perfunctory remedial treatment, no vocational specialization is opened to them, and little prevention is being taught. While other groups of abnormal persons are yearly receiving more of the assistance that they rightfully deserve, the speech defectives are being thwarted and neglected.

The need for speech correction. The immense number of speech defectives indicates the vital necessity for remedial speech work. Ninety-six percent of the speech-handicapped individuals of school age go without any retraining, and far too many of these show a yearly increase both in the severity of the actual defect and in the abnormalities of personality which are built around it. In addition to these, there are hundreds of thousands of adults who are maladjusted because of a speech difference. There is no available aid for them, and only a few of the fortunate ones are able to make contacts which will bring them any speech or personality reëducation.

There is also an essential economic need for speech-correction work. Unless these speech defectives can be retrained so that they will be able to fill an appropriate place in the industrial and professional world, society will continue to suffer an economic loss because of them. A speech handicap is a distinct barrier to the acquisition of a job, and many thousands of persons with speech handicaps are forced into economic dependence upon others. Then, too, those who are able to secure employment in spite of a speech difference are usually compelled to go into work which makes no demand upon speech. Natural ability and talent are unimportant if the person cannot speak normally. So we

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Principles and Methods

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of the average adult speech defective. He is aware of his difference, he has not been able to adjust to it, and he has had no help in overcoming it. As a consequence, he may retreat from reality and become a daydreamer or a suspicious and distrusting individual. He may develop over-aggressiveness or compensatory activities which the normal group penalizes, or he may become submissive and yield to whatever environmental difficulty he is forced to meet. The majority of adult speech defectives develop serious personality handicaps which not only cause them great personal unhappiness but also bring conflict and maladjustment into the existence of those with whom they associate.

Responsibility for speech correction. We have this vast number of speech-handicapped individuals in our society. They need help and they need it immediately. Some agency must take the responsibility for giving it to them.

Up to this time, that responsibility has been avoided. Speech defectives often turn to the medical profession, but most physicians have little training or no interest in such remedial work. Most parents of speech-handicapped children have been at a loss—they have not even had the information which is available concerning their children's speech problems. The school, in general, has not accepted the responsibility. Both Wisconsin and California have instituted state-wide systems of speech-correction work, and various city schools have hired special teachers for remedial speech. But most school systems feel that it is an extravagance to hire a special supervisor, and they refuse to place the added burden of such work on the already overburdened primary and intermediate teachers.

Since no one has accepted this responsibility, no preventive program has been instituted, and our total number of speech-handicapped individuals increases yearly. The most effective time for speech retraining is in the first few years of a child's school life, and each year of defective speech

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stutterers and many speech defectives of other types suffer from feelings of personality inadequacy, and that retardation of speech defectives in school is not caused by a lack of intellect but by emotional maladjustment.

2. Bender, J. F., "The Speech Handicapped Student as a Personnel Problem in College," *Proceedings American Speech Correction Association*, 1934, pages 75-79.

A statement of the problems which face a personnel officer in a college in regard to speech handicaps: 1. Finding the student with a speech handicap. 2. Analyzing the defect. 3. Providing therapy. 4. Providing guidance. 5. Providing extra-curricular activities.

3. Carlson, A., "Crippled in the Tongue," *Harpers*, October, 1937, pages 539-546.

A popular description of the handicap of the speech defective, the penalties inflicted upon these individuals by society, the need for speech correction, and some brief accounts of treatment of organic speech defects, and therapy for the spastic and the stutterer.

4. Elliott, E. B., "The Handicapped Child Is Entitled to a Fair Chance," *Michigan Education Journal*, February, 1939, page 281.

A discussion of the benefits, services, and extent of special education for the handicapped child in Michigan. It concludes with a plea for extending this service to the speech defective.

5. Garrison, K. C., "The Crippled Child," *Peabody Reflector*, 1938, Vol. 11, pages 55-56.

The results of therapy for crippled children and the ways of keeping them from becoming socially maladjusted are cited. The belief is expressed that there is no actual point of separation between those called normal in their bony structure and those called crippled.

6. Murchison, C., *Handbook of Child Psychology*, Chapter 19, Worcester, Clark University Press, 1931.

A brief history of the treatment of the feeble-minded by R. Pintner. He also includes definitions of feeble-mindedness, discussion of diagnosis, incidence, classification, causes, and treatment. Accompanying pictures and a complete list of references are given.

7. North, C. C., *Social Problems and Social Planning*, pages 138-141, New York, McGraw-Hill Book Co., 1932.

A brief history of the treatment of the mentally ill and handi-

*This Book Is Dedicated to
My Wife,
Who Refuses to Allow Her
Name to Appear as Co-author*

disorders are: cleft or sluggish palate; defective hearing; nodules and growths on the vocal folds themselves; catarrhal and other diseases of the nose and throat; lack of sexual development; adenoidal growths; and so on. The majority of voice disorders are due either to strain or to emotional problems.

Parents and teachers should be trained to recognize the early symptoms of voice disorders. They should take their cleft-palate children to the oral surgeon as soon as possible. They should realize how much damage may be done by subjecting the child's voice to overstrain. They should realize the influence of imitation, and strive to serve as good rather than poor models for their children. They should know enough mental hygiene to enable them to lay a basis for the intelligent solving of emotional conflicts. So much can be done by intelligent teachers in the way of prevention of all these disorders that sooner or later the educational profession must adopt speech correction as a formal part of teacher training. Parent-teacher groups find the study of speech development tremendously interesting and helpful. Parent-teacher coöperation is always stimulated through a joint assumption of responsibility for a child's speech improvement. The place for speech correction is not in the college or university clinic but in the public schools.

Parents and teachers must realize that speech patterns are habits and that any systematic errors must be eliminated as soon as possible. They should be aware of the great difficulty experienced by an adult in getting rid of a lisp or a sound substitution. They should not delegate the responsibility to nature or to each other. They should not content themselves with an occasional correction or expression of irritation. They must seek out the sources of proper information and apply the proper techniques in a systematic and intelligent manner. One caution, however, is necessary.

Preface

Although, like the poor, the speech defective has always been with us, it is only recently that the general public has come to realize the seriousness of his handicap. This increased awareness of the problem has reflected itself in a rapidly growing demand for an organized body of information concerning the nature of the various speech disorders and the modern methods used in their correction. Educators are recognizing what professional speech pathologists have always known—that the work of the specialist must be supplemented by intelligent classroom and home co-operation if the millions of speech defectives are to have adequate help. Eventually, remedial speech will have the same status in the public schools which remedial reading now enjoys. Every elementary teacher will have some training in speech correction; special speech-correction teachers will be provided for supervision in the larger school systems; and psychoeducational and speech clinics will be available for the more difficult cases. These trends are already being realized in many states. In any society so dependent upon communication, the “teaching of talking” must finally achieve an important place in education.

Unfortunately for those students who desire a basic knowledge of the principles and methods of speech correction, much of our knowledge remains scattered and unsystematized. This condition has been especially apparent in the case of the techniques actually used. When the latter are discussed, they are usually couched in such vague or technical terminology that small help is provided. Much valuable information is contained in scattered periodicals,

correction because the words most commonly used by children are classified according to sounds. These words should always be incorporated into games, errands, stories, or conversations. Practice of words in word lists will produce little transfer to real speech situations unless those words are taken out of their series and made part of the actual communicative function. Speech assignments such as those described in the last section need such word lists, and the good speech teacher can find many other uses for them, but they should never be used for meaningless, dull, repetitive drill. The meaningless sentences and tongue-twisters can occasionally serve as challenges or speech games, but they should never take the place of intelligent speech correction.

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2. West, R., Kennedy, L., and Carr, A., *The Rehabilitation of Speech*, pages 36-37, New York, Harpers, 1937.

An illustration of the main differences in the educational techniques used to teach normal children and speech defectives acceptable sounds—"training vs. retraining."

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A discussion of baby talk, especially that with a neurotic etiology, with the common errors listed.

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This reference discusses the relation of hearing and speech, with mention of the education of the deaf child in speech and his possibility of improvement.

3. Fymbo, L., "The Relation of Malocclusion of the Teeth

but good bibliographies are hard to find. These observations merely point to the obvious truth that speech correction is a relatively young profession. The author hopes that this book will aid in the movement toward the systematization and organization which is so urgently needed.

The author is indebted to other writers, past and present, who have felt a similar demand. He is indebted to his friends and professional colleagues, to the speech defectives with whom he has worked, and to his own past experience as a severe stutterer. He is especially indebted to Dr. Ernest Henrikson and to Dr. Bryng Bryngelson. Finally, as the dedication indicates, this book is the result of a joint endeavor, and only a feminine reticence prevents adequate acknowledgment, on the title page, of the debt to my wife.

C. VAN RIPER

mal psychological basis; and cluttering is fast, indistinct speech. Some causes are listed for each.

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A list of nine exercises specifically designed for ear training.

2. Nemoy, E., and Davis, S., *The Correction of Defective Consonant Sounds*, pages 26-27, Boston, Expression Co., 1937.

Exercises are given for enabling the student to hear good tone production and normal sounds.

3. Travis, L. E., *Speech Pathology*, pages 226-231, New York, D. Appleton-Century Co., 1931.

A statement of the importance of repetition of stimuli and the perception of a goal in corrective work.

4. West, R., Kennedy, L., and Carr, A., *The Rehabilitation of Speech*, Chapter 28, New York, Harpers, 1937.

Ear training is recommended in teaching all sounds to children. Drills are given, and training in auditory discrimination is presented as being especially necessary for the sibilant and fricative sounds.

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of *Speech*, Chapters 15, 16, 17, 18, and 28, New York, Harpers, 1937.

Chapters 15, 16, 17, and 18 describe the *s, z, r, l, sh, zh, ch*, and *j* sounds, giving the defective substitutes for each one, and suggested remedial exercises. Chapter 28 gives general principles for training and suggested exercises for children who make sound substitutions.

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Whenever the case exhibits a chronic hoarseness, huskiness, or breathiness, it is essential that a specialist make an examination before the speech correctionist does any remedial work. Whenever the voice disorder follows a severe injury or illness, the physician must be consulted. Whenever the voice disorder accompanies such symptoms as extreme lassitude, extreme tenseness or activity, spasticity, or conditions of ill health, no speech-correction work should be done without medical approval. Moreover, voice is one of the most sensitive indices of mental health, and, whenever the voice disorder seems to be merely a part of a pronounced psychoneurotic condition, the psychiatrist should be consulted. The speech correctionist is favorably situated to contact many cases which the medical profession would never see, and he should always seize the opportunity to get coöperation from it. Unfortunately, laryngoscopic examinations by a specialist are rather costly, but they should be made whenever possible. Voice disorders demand more medical coöperation than any other disorders.

Of course, many voice cases are functional, and the physician will readily advise speech-correction procedures for them. Other cases demand retraining even after the pathology or abnormality has been taken care of through medical or surgical therapy. Habits grow up about voice, even as they do about articulation. Generally speaking, the speech-correction teacher will do most of her work with cases of nasality (including cleft palate), denasality, throaty, guttural, or harsh voices, monotones or peculiar inflections, high-pitched or falsetto voices, and weak or aphonic voices.

Methods for removing the causes of the voice disorders and for minimizing their effects. The physician will take care of the eradication of most of the remediable organic causes for voice disorders. The speech correctionist should know enough about these causes to appreciate what

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monal treatment or other measures. Schicker² reports successful lowering of pitch in three of five cases as a result of administering testicular extracts. On the other hand, Crews³ demonstrates how such techniques as silence, suggestion, relaxed vocal sighing, and mental hygiene can solve the same problem when the causes are psychological.

Puberty. The teacher should be able to recognize the symptoms of change of voice in early adolescents, and she can do a great deal to minimize the emotional accompaniment which usually occurs. Education of parents, teachers, and associates of such children is often necessary, since many "boy sopranos" become voice cases if their mistaken parents or teachers seek to perpetuate the former pitch levels. Often the child can be taught to control the fluctuations by relaxation and the use of accessory movements such as head and body gesturing. The elimination of undue excitement and the common speech conflicts is always important at this time.

Sluggish articulators. Many voice cases without organic defect have palates, tongues, lips, and jaws which are rather sluggish in their speech activity, and many other cases adopt fixed habits of speech in which the above-mentioned structures make but minimal movements. Nasality and a "mushy, hot-potato-in-mouth" quality often result from such habits, and, therefore, the habits require modification. The general outline of treatment for these cases is as follows: (1) phonograph recording of voice and other techniques to promote self-hearing; (2) comparison with other individuals in the habitual use of the same structures (This may be carried out through testing the comparative abilities to make a certain number of tongue-palatal contacts per sec-

² Schicker, H., "Die Eunuchoiden Stimme und Ihre Hormonale Behandlung," *Arch. Gest. Phon.*, 1938, Vol. 2, pages 161-175.

³ Crews, L., "A Case of Juvenile Voice," *Proceedings American Speech Correction Association*, 1936, Vol. 6, pages 142-149.

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a quality. They draw up the thyroid to a position directly underneath the hyoid bone, thereby producing a rather high-pitched and strident tone. Some of them, especially the announcers, hawkers, and newsboys, acquire habits of maintaining a constant pitch with a minimum of inflections. Others get stereotyped inflections so marked that they call attention to themselves and interfere with communication. Occupational voices, such as the "schoolma'am's voice" and "clergyman's tone," frequently result. Most of these conditions are readily cleared up through information as to the causes and the other possible vocal methods available to these speakers. Where the causes result in an actual voice disorder, that disorder may be removed by the methods to be described in the next sections.

When poor pitch discrimination, the use of an unnatural pitch level, or the presence of bad breathing habits are the causes of the voice disorder, remedial measures are necessary. The habits must be broken, and new ones must be built up. These will be discussed in the sections under the treatment of pitch and intensity disorders.

Imitation. A very common cause of voice disorders is imitation and association with other individuals whose voices are defective. Most children ape the mannerisms of all individuals for whom they have respect, affection, or hero-worship. This imitation is a form of identifying oneself with the person imitated. Unfortunately, it often causes the child to acquire the disabilities of the model. The child usually progresses through a series of such identifications as he matures, and so the bad effects of any single identification are usually canceled. Education of the parents or associates of the child will prevent any pathological fixation resulting from encouragement of such imitation. The best method to use in eradicating the influence of imitation is to bring the mannerisms up to consciousness with consequent insight into the mechanism involved. The child

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tion, quality, and intensity all show the influence of emotion. The long training required by actors in the perfection of their art, a training which frequently demands the artificial creation of an emotional state, shows this relationship. The phonatory aspect of speech always tends to reflect the attitude of the person speaking.

In view of these observations, it is not difficult to understand why emotional conflicts and maladjustment will produce voice defects. Aphonia, the complete loss of vocalized speech, is frequently hysterical. Too high a pitch level, nasality, and a harsh or strident voice quality are often due to the individual's desire to attack or dominate the group which makes him insecure. Individuals who tend to retreat or escape from unpleasant reality or social rejection often exhibit monotones or stereotyped inflections. Such symptoms are due to the desire to guard against the group's awareness of the emotion being experienced by their victim. And, as we said in the last section, a sense of inadequacy to any situation results in hypertension, which itself can cause disorders in all the three aspects of speech. When such factors cause the peculiar voice, it is often necessary for the speech-correction teacher to help the individual solve his emotional conflicts.

Whenever possible, the speech correctionist should enlist the coöperation of the school psychologist, the parents, and the classroom teacher. Occasionally it will be necessary to refer the case to a psychiatrist or psychoeducational clinic. It must always be remembered that the solution of mental conflicts involves a great deal of responsibility for the teacher. Amateur experimentation with human lives is detestable. Nevertheless, parents and teachers are constantly being compelled to help the child solve his emotional problems, and the speech correctionist must often aid them. If he thoroughly realizes his limitations and adopts the attitude of an assistant rather than that of a Dr. Freud, he

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on the back of the white swan," the fundamental pitch of each vowel in any of the words may differ somewhat from that of the others. Moreover, certain vowels are inflected—*i.e.*, they are phonated with a continuous pitch change which may either rise, fall, or do both. Of course, each inflection has an average pitch by which it may be measured, if the extent of the variation is also considered. If all the pitches and pitch variations are measured and their durations are taken into account in the speaking of the preceding illustration, we will find that they cluster about a certain average pitch, which may be termed the "key" at which the speaker phonated that sentence. This may be determined experimentally through the use of the trained ear, as indicated in the chapter on speech tests and the reference by Gilkinson listed at the end of this chapter. It should be understood, of course, that different pitch levels will be used under different communicative conditions. Nevertheless, each voice can be said to have a habitual pitch and a habitual pitch range, in which most of the communication is phonated.

Methods for changing the habitual pitch level. The procedure for changing the habitual pitch should consist of the following techniques: (1) convincing the student of the inadequacy of his present habitual pitch; (2) ear-training techniques in the recognition and discrimination of pitch levels and variations; (3) methods enabling the student to use the desired pitch level and normal variations and inflections at that level; (4) techniques for making the new pitch level and range habitual. These will now be discussed in detail.

1. *Convincing the student of the inadequacy of his habitual pitch.* The most effective method of doing this is to provide an opportunity for the student to hear his own voice. Few of us are able to hear our own voices, as we are too concerned with the communication involved.

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time, to separate the vowel from the more difficult consonants such as the *m* or *n*. Assimilation nasality, or the carrying over of the nasality legitimately used in producing or preparing for the *m*, *n*, and *ng* sounds, often demands the use of signal practice to insure clean-cut transitions. After the student has mastered the prepared reading material he may progress to unscored reading, then to careful conversation with the speech correctionist, and, finally, to speech in outside situations. Speech assignments, checking devices, negative practice, penalties, and nucleus situations will make it possible for the student to attain complete mastery of his vocalization.

Other voice quality disorders and methods of therapy. Hoarseness, huskiness, throatiness, and all the other odd types of voice quality are frequently due to hypertension, emotional conflicts, overstrain, and organic defects; the treatment for these conditions has already been discussed. The student should become familiar with the references dealing with these aspects of the disorders.

When these other disorders of voice quality are due to functional causes such as imitation or improper habits of voice production, the same sequence of ear training should be used, although the accessory devices used for nasality cannot be employed. Phonograph recordings will enable the student to study the voice quality in a manner that can be obtained by no other method. These recordings may be used continuously during treatment, and the teacher may record her own voice quality to provide comparison with the student's. Whenever the student is required to listen to his own voice, the voice recorder should be used, as it saves a great deal of time. However, through intensive and well-planned training, the same results may be obtained without this apparatus.

When the voice is pectoral, guttural, or throaty, it is often necessary to show the student that it is possible to articu-

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constriction of the laryngeal musculature usually occurs. In treating this voice disorder lowering the habitual pitch level, relaxation, and the vocalized sigh are the techniques commonly employed. The student is required to diminish the intensity of his ordinary speech, and to follow each "break" into the old falsetto quality by sighing and by using some stereotyped phrase or sentence such as "that is to say" or "What I mean to say is" These sentences are practiced sufficiently so that they provide an easy vehicle for returning to the new voice quality and pitch level.

Throatiness. The throaty quality of voice, when due to functional causes, is one of the most difficult to change. It is occasionally the result of lowering the habitual pitch level, especially when a falsetto was previously used. When the constrictor muscles of the pharynx are hyperactive, the choked, throaty voice is frequently found. Many of the individuals with such voice quality depress their chins against their necks when the throatiness is most apparent. Tension of the extrinsic laryngeal and pharyngeal musculature is usually present. The speech defective seems to be speaking as he prepares to swallow. The treatment of throatiness usually consists of the following techniques: (1) raising the habitual pitch level three or four semitones; (2) insisting upon a very erect posture and eliminating the tendency to depress the chin through penalties, checking devices, and negative practice; (3) using chanting and singing exercises to reduce the excess tension and silent semi-overt rehearsals of sentences prior to utterance; (4) preceding utterance by flipping the tongue up and down in the mouth cavity so as to prevent the incipient swallowing movements from occurring, thereby breaking up the old pattern of vocalization; (5) using vocalized sighing to produce some vowel free from throatiness and thereafter using this vowel to "key" all vocalization in nucleus situations.

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This pressure is brought about primarily by the ventricular bands. . . . Consequently, but a very small strip of the glottal lip is left free to vibrate. The resultant is that the edge is pushed up and these edges are forced to close together in cymbal-like fashion.

Treatment for this disorder is similar to that for guttural and throaty voices except that, in addition, the student is taught to recognize the raising of the larynx. This can be done by observation in a mirror and by feeling the notch between the thyroid and the hyoid with the forefinger.

Imitation as a clinical device. All functional voice disorders respond to direct imitation as a form of therapy. The model set for the speech defective should contrast as much as possible with the former voice defect. Thus nasality cases are required to imitate denasality, weak voices simulate models who have excess loudness, and so on. Other characteristics of the persons used as models should also be imitated. A throaty voice defective may be asked to imitate some person who has a thin, twangy voice, not only in his speech, but also in his manner of walking, posture, gesturing, and nervous movements. It is also useful to employ a phonograph recording of some opposite type of voice, playing it over and over and requiring the student to say the same sentences in unison with the record. Other recordings may be used in which the model repeats each sentence twice, with a pause after each one to permit the student to repeat the same words, thereby enhancing the likelihood of more perfect imitation.

It must always be remembered that voice disorders become such intimate parts of the personalities of their possessors that they are not eradicated easily. The student must be allowed to become accustomed to the new voice, and this process should be a gradual one. He should not be asked to use the new type of voice in all situations, after he has first acquired its mastery. Nucleus situations

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SPEECH CORRECTION

Principles and Methods

I

Speech Handicaps and the Need for Speech Correction

The predicament in which fate had placed me, and the attitude of the majority of people, caused life to seem almost unbearable. I became antagonistic and rebellious. I cursed everything, especially the force that made me. I drew away from contacts, even from those persons who seemed to understand and sympathize, and stayed as much as I could to myself. In this seclusion I did not grow passive, but my turbulence became more reflective, and I pondered on questions of a social nature, as:

Since society permits to the handicapped person no desirable position, it has no right to demand existence of him. Since it does demand his existence, it is as responsible as is the handicapped for the handicapped's adjustment.¹

So R. V. McKnight, a stutterer, writes in a self-analysis of her own case. And in this paragraph she has not only expressed a speech defective's own reaction to her handicap, but also indicated society's position with regard to abnormality. Society now demands that an individual exist even though he be so disabled and unfit that he finds it impossible to maintain his position in his group. This attitude, in itself, shows a complete change in civilization's adjustment to those who differ from the normal, for primitive tribes would not even tolerate the existence of the handicapped.

¹ McKnight, R. V., "A Self-analysis of a Case of Reading, Writing, and Speaking Disability," *Archives of Speech*, 1936, Vol. 1, page 43.

Primitive reactions of society to the handicapped. Historically, the first reactions of normal persons to abnormality in others were those of rejection. Among primitive peoples the rule of survival of the fittest has always been as paramount in human relationships as it has been in nature. The abilities to secure food and to beat off enemies were vitally important to the survival of individuals and tribes, and the handicapped person often possessed neither of these skills. Both the tribe and the family were penalized if they included members with an evident disability, and history tells us that a sickly or deformed child was usually drowned. E. Ettinger mentions that in the Massagetae, Sardi, Slav, and Scandinavian tribes of primitive times a sentiment of filial duty impelled sons to kill their parents when the latter became valueless to the tribes because of sickness or old age.² Indeed, so high was the premium on bodily perfection that many savage tribes always killed one of each pair of twins, for they believed that any multiple birth precluded normality in all offspring except one. Primitive society could not afford to sustain the weak or incompetent individuals, so it rejected them from the group, seldom allowing them to survive.

Following this period, normal society seemed to react to abnormality in a humorous way, revelling in the bizarre and preserving the malformed for entertainment purposes. Often unwanted children who had been left exposed on the highways (as they often were by Greeks and Romans after the family had reached its desired limit) were carried away by unscrupulous schemers who mutilated the children so that they could be used as pitiful beggars or as laugh-provoking clowns. The Middle Ages found a great demand for the crippled, blind, and mentally deficient for use as court jesters and fools. Thus society reacted to misfortune

² Ettinger, E., *The Problem of Crime*, New York, Long and Smith, 1932.

in others by laughter and by the consequent heightening of its own sense of security.

Religion and education initiated the first humane movements toward helping the handicapped. Christianity, Mohammedanism, and Confucianism taught that anyone with a soul had a right to existence. Furthermore, they taught that in any group the weaker members deserved some protection from the stronger. They stimulated tolerance and a due consideration for the feelings of others. As a result, the weaker individuals were pitied for their misfortunes and were often sheltered. In 1200 A.D. a religious group, the Order of the Sisters of Charity, undertook the first organized work for the unfit. A century later, the first colony for the feeble-minded was established in Belgium. Since that time the church, the government, and the educated classes have led in the extension of the concept that the abnormal person not only has a right to existence, but also deserves pity, protection, and assistance.

Reactions of children to the handicapped. In our present civilization, we find not only remnants of all of these ancient attitudes toward the handicapped individual but also new reactions. Children and uneducated adults often closely resemble the savages in their treatment of society's unfortunates. Somerset Maugham's pathetic hero in *Of Human Bondage* felt no extreme sensitivity about his crippled foot until the ruffians on the playground turned the recreation hour into a group imitation of his halting gait, and even mistreated him physically until their curiosity about the actual appearance of his foot was satisfied. This curiosity concerning the abnormalities of human nature has always existed in the majority of people, and children and intellectually immature adults seldom inhibit the desire to satisfy that interest, manifesting it in any reaction from a rude stare to a cruel imitation. If the unfortunate individual reacts aggressively to such plaguing, the tormentors usually

does feel more responsibility for the care of the handicapped than any other age of civilization. This feeling has resulted not only from the realization that defectives deserve shelter within the group but also from the knowledge that such individuals can be used advantageously. In an age of specialization, it is much easier to find a task which a deaf, blind, or crippled individual can do well than it would have been in ancient times. He not only can make some contribution to strengthen the group but can also increase his own independence.

Present treatment of other handicapped individuals. Society has accepted its responsibility especially for those handicapped by blindness, deafness, and lameness. Parents and teachers are educated in preventive measures. Treatment is offered for the actual handicap, and there is subsequent occupational training which will enable the subject to become a useful member of society. Of 14,000 blind children of school age, 10,000 receive some occupational training. Of 18,000 deaf children of school age, 15,000 are being prepared to find a useful place for themselves. National benefit dances are given for the crippled, seals are sold for those suffering from tuberculosis, and many fraternal and civic organizations sponsor funds which care for some of the blind and deaf. State funds, too, are available for such purposes, and state schools for the handicapped, though generally overcrowded, are providing reëducation and rehabilitation.

Treatment of the speech handicapped. But in spite of this more optimistic view of society's humanitarianism, we still have a vast number of defectives who live unaided and misunderstood. In this country alone there is a group of afflicted persons numbering over six times the total number of blind, deaf, crippled, and mentally defective combined. This group consists of those who suffer from speech defects. These persons often cannot speak for aid themselves.

have a vast number of speech defectives who are economic misfits. Inherent ability is being wasted because they have had no opportunity to improve their speech or to fit themselves for the competition with normal speakers. In addition to their future liability, the younger speech defectives place an added burden upon society's educational system. The average speech-defective student is retarded one year in school because of his handicap, and the educational expenditure is therefore much greater. In terms of dollars and cents alone, it would be economical to provide treatment for them in the public schools.

The cost of reëducating such a large number of defective children is often given as an argument against the provision for such remedial work. The White House Conference of 1930 provided the approximate yearly cost of reëducating each handicapped child: blind—\$500; deaf—\$264; crippled—\$500; feeble-minded—\$300; speech defective—\$10. The actual cost of providing retraining for a speech-defective child is only \$10 annually, almost a negligible percentage of the amount expended upon other handicapped children. And although the total number needing treatment is much larger, the future economic gain in turning these children from economic misfits into self-sufficient adults would justify the present financial expenditure.

In addition to the inherent quantitative and economic necessities for speech therapy, we must consider the personal need of the speech defectives themselves. Although the actual speech handicap cannot be considered as obvious or as dramatic as the difference of a blind, deaf, or crippled child, it can foster personality deviations which often develop into more of a handicap than the actual speech impediment. The large number of speech defects found among behavior cases in our training schools, reformatories, and mental institutions is one proof of this. Another more striking evidence is found in the behavioral characteristics

which is added to a child's existence lessens the probability of his overcoming the handicap and developing a normal personality. Parents have not been educated in the manner of teaching speech or in the methods for preventing the development of any speech abnormality. In desperation, both children and adults with a speech difference have turned to the "quacks" who guarantee a cure, and who only teach them the tricks or unwholesome mental hygiene which serve to aggravate the entire disorder.

Where responsibility should fall. It is evident that the responsibility for this problem must fall into competent hands. Parents must be educated to recognize the early symptoms of speech disorders and to prevent the development of emotional conflicts about a speech difference. They must be encouraged to take their child to a reputable clinic for a diagnosis and suggested therapy if it is possible. Much information can be disseminated through the university, college, and extension speech clinics. However, the real responsibility must fall upon the public schools. Speech-correction teachers and supervisors must be trained, and must coöperate with the parents and other teachers in remedial work. And very effective therapy can be accomplished by the intelligent primary and intermediate teacher, who should be educated not only in actual speech retraining but also in the methods for prevention of speech defects and in the understanding of handicapped children. Only in this way can these hundreds of thousands of speech-defective children be aided. Only in some such manner can we provide future usefulness and adequate adjustment for the child with a difference in speech.

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A summary of studies upon this subject, concluding that most

capped, showing that the sick poor have been better cared for than any other needy group. The inadequacy of the care of the handicapped is also discussed.

8. Steer, M. D., and Trimble, O., "Speech Handicaps of Students in Purdue University," *Proceedings American Speech Correction Association*, 1936, pages 54-69.

A consideration of the speech defective in the college situation, the speech correction program at Purdue, the classification of the 333 defectives according to type of defect, and the factors contributing to the speech problem on that campus.

9. Wallin, J. E. W., *The Education of Handicapped Children*, pages 3-21, Boston, Houghton Mifflin, 1924.

A summary of the historical trends in the care of the handicapped and the work of the men who led the movements. Theories of feeble-mindedness and questions of differential education for such cases are included.

10. *White House Conference on Child Health and Protection, Special Education*, Chapter on "The Child Defective in Speech," New York, D. Appleton-Century, 1931.

A report from questionnaires issued to cities with populations of over 10,000, showing incidence of speech defectives to range from 1.0 to 21.4 per cent, with an average from the totals of 5 per cent. Need for correction is stressed.

The Nature of Speech

To the majority of us, speech is as casual a function as breathing or walking. We never think very much about it. Communication seems to require no greater skill than merely thinking aloud and listening to the thoughts of the other person. A moment's consideration will convince anyone that this attitude of casual acceptance is not merited by the facts. There is probably no human behavior so intricately and beautifully coördinated as speech. But we learned our speech skills early in life; we have never watched them in action; we use them constantly and habitually as communication-tools rather than as artistic skills. Therefore, we marvel whenever we find another mortal having any difficulty with speech. This attitude is probably responsible for the common belief that the speech defective must be deficient in mentality or emotional maturity. This belief soon disappears when the complexity of the speech process is understood.

Although the beginning student of speech correction cannot hope to understand the detailed mechanics of speech, he must have sufficient knowledge of the physics, physiology, and gross anatomy involved in speech to recognize abnormality when he sees it. He must be able to recognize malformation and malfunction of the articulatory apparatus. He must understand the workings of the structures of respiration, phonation, and resonance sufficiently to know what

pathological structure or function is likely to appear. In short, he must know enough about the mechanics of normal speech to understand the nature and cause of defective speech. In the following paragraphs this information is given in very condensed form, and it must be supplemented and reviewed by outside reading, references for which are given at the end of this chapter.

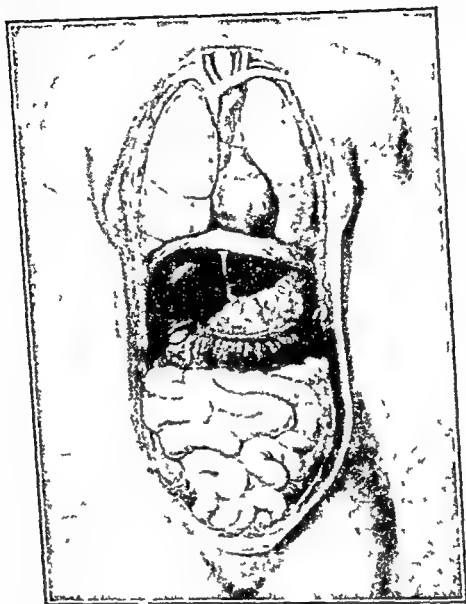
The structures and mechanics of speech may best be classified under the following headings: respiration, phonation, resonance, and articulation. We will consider the significant biological, anatomical, physiological, and physical facts under each heading.

Respiration

Biological importance of respiration. The biological importance of respiration, or breathing, is obvious. Gases must be interchanged. The living tissues must have oxygen. Speech demands breath, but its demand is far from being as primitive or as potent as that of life itself. Speech is able to impose its demand upon the respiratory function to a certain degree, for breathing used in speech differs considerably from normal silent breathing, but the older biological functions will always dominate in any emergency. Thus the excess saliva of the drooling spastic produces frequent swallowing at irregular intervals, causing gasping and coughing to distort his speech.

The respiratory apparatus. The respiratory channel consists of an approximately vertical tube arising from two collapsible bags, the lungs, and ending in two orifices, or openings, those of the nose and mouth. Air may be taken in either through both of these or through only one of them, since the tongue or lips may block the oral opening and the soft palate (velum) may block the nasal opening. The nasal and mouth cavities open posteriorly into the pharynx, or throat. Directly below the pharynx in the vocal tube is

the larynx, the structure which houses the vocal cords. The channel descends through the larynx into the trachea, or windpipe, which divides itself into twin tubes, the bronchi, which in turn lead into the lungs.



Courtesy of Clay Adams Company

Fig 1 The trachea, lungs, diaphragm, and abdominal viscera

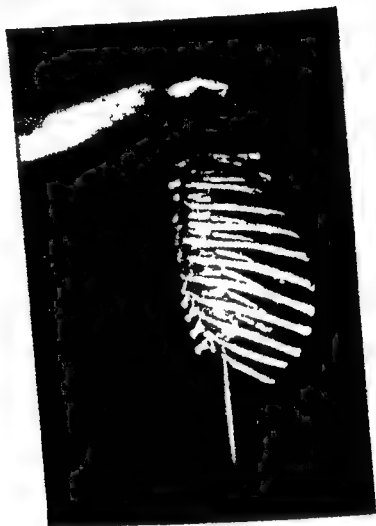
These collapsible bags are enclosed in the two chambers of a large cavity (the thorax) which is formed by the rib cage and its floor (the diaphragm). This thoracic cavity is variable in size, being expanded or contracted by the joint action of a large number of abdominal and thoracic muscles. The majority of these muscles are paired, one being located on the right side of the body and its mate in an identical position on the left side. The muscles of respiration will be named when their functions are described in a later paragraph. Each of these muscles, of course, is activated

by nerve fibres connecting it with the various parts of the nervous system. Muscles acting in voluntary use of the breathing apparatus are believed to be innervated by the cerebral cortex of the opposite side by way of the cranial and spinal nerves. The same muscles, when performing emotional or very automatic functions, are thought to be controlled by the corpus striatum, or thalamus, and they use the same lower nerves as pathways. In silent breathing (as opposed to emotional cries, singing, or careful speech) the pneumotaxic center in the medulla is thought to be in control. Finally, it should be said that in emotionally toned speech the autonomic nervous system is able to affect speech in a very striking fashion by controlling the constriction and dilation of blood vessels, the secretion of glands, and the activity of the viscera, and by interfering with integrations of the cerebral cortex.

The physics of respiration. The physics of respiration is simple. If the volume of any cavity having only one opening is suddenly increased, the pressure of the atmosphere outside will cause air to rush into the cavity through the opening. When the cavity is decreased in size, the air will be forced out. This is exactly what happens in breathing. The chest cavity is increased by lowering its floor (the diaphragm) and by lifting the slanting ribs that enclose it. Air immediately rushes through the nose and mouth, down the tube composed of the pharynx, larynx, trachea, and bronchi, and into the little air sacs of the lungs, thereby causing the latter to expand until they fill the enlarged cavity. Inhalation can then be said to have taken place. In exhalation, the same muscles which lifted the rib cage stop contracting and relax, thereby causing the ribs to return to their slanting position. At the same time, the diaphragm is relaxed and raised back to its former level by the pressure of the broad belt of abdominal musculature on the stomach, liver, and spleen. Since the cavity is thereby

decreased in size, the air is expelled and exhalation has occurred.

Some students with an interest in anatomy and physiology always desire a more detailed account of the musculature which is active in the increase and decrease in chest volume. These students should attempt to locate and



A

B

Fig 2. Models illustrating position of rib cage: (A) in exhalation; (B) in inhalation.

identify the muscles which pull upward on the various ribs. These are the pectoralis major, the pectoralis minor, the subclavius, the levatores costarum, the serratus anterior, the serratus posterior superior, and, to a lesser extent, the scaleni, the intercostals, and the sternocleidomastoid muscles. Another group of muscles which is important in inhalation includes the diaphragm and its direct antagonists, the serratus posterior inferior and the quadratus lumborum. This group of muscles contracts at once to lower the dome-

shaped floor of the thorax and to pull upward simultaneously on the lower ribs. As the dome of the diaphragm is pulled downward and flattened, the viscera are forced outward to protrude the abdomen and stretch its relaxing muscles. Thus in inhalation, both the thoracic and abdominal circumferences are increased.

Exhalation and inhalation in speech and silence. In exhalation, both the thorax and abdomen decrease in circumference. The decrease is caused by the relaxation of the muscles mentioned in the last paragraph and by the contraction of the following muscles, which are a part of the abdominal sheath: the external oblique, the internal oblique, the rectus abdominis, and the transversalis abdominis. The transversus thoracis is the only chest muscle contracted in exhalation. As the abdominal muscles are contracted, the viscera are compressed and forced upward against the floor of the diaphragm.

Other muscles are used to knit the rib cage together, and still others are used in strenuous speech or song. It is important to note that as the thoracic muscles contract in inhalation, the abdominal relax; while as the thoracic muscles relax in exhalation, the abdominal contract. In certain disorders, notably spastic paralysis and stuttering, this perfect balance or reciprocal functioning is often broken. Many of the breaks in a spastic's speech are due to his inability to relax the chest muscles, an inability which compels him to make excessive abdominal contractions to maintain an airflow sufficient for speech.

The difference between speech breathing and silent breathing may be summarized as follows. In the former, the cerebral cortex, rather than the medulla, is responsible for the initiation of the nervous impulses that are sent down to the muscles. Speech breathing, therefore, is voluntary; silent breathing, involuntary. In breathing for speech, the thoracic muscles are relaxed gradually rather than suddenly.

The abdominal muscles contract strongly. The free channel in the respiratory tube is constricted and interrupted at the larynx, at the naso-pharynx by the velum, or at the mouth by the tongue or the lips. In silent breathing, exhalation and inhalation are approximately equal in amplitude and in duration. In speech, exhalation lasts much longer and frequently uses a greater amount of air.

"Correct" methods of breathing. Although singing, elocution, and speech teachers have maintained the contrary opinion for years, there is, according to recent research, no one proper way to breathe. Some authorities have recommended what is called thoracic breathing, meaning that the muscles of the upper chest move earlier or more extensively than those of the lower chest or abdomen. Others recommend abdominal breathing, and still others the vague concept termed diaphragmatic breathing. However, all of us use all of these structures in our breathing and, at one time or another, we exhibit all of these types of breathing. All authorities agree that clavicular breathing (the use of the scaleni, sternocleidomastoid, and shoulder muscles to raise the clavicles and sternum) is very inefficient. Training in any type of breathing seems to help the untrained speaker to use sufficient breath and control in gradual exhalation, and these are the only breathing skills needed.

Breathing abnormalities in speech defectives. Some of the common breathing abnormalities found in speech defectives are: speech attempt on inhalation (stuttering, voice cases); lack of synchronization between thorax and abdomen (stuttering, spasticity); wastage of the exhaled air (stuttering, voice cases, deaf, cleft palate); shallow inhalation (voice cases); too deep inhalations (stuttering and spasticity). In speech disorders such as stuttering or spasticity, where fear plays an important role, even the silent breathing is affected. Moreover, bad breathing habits can be conditioned to the speech attempt or to the release from

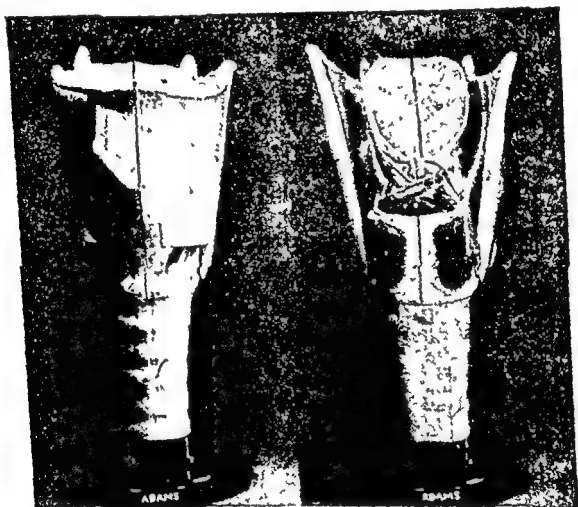
stuttering block, and these bad habits augment the severity of the handicap.

Phonation

Biological importance of phonation. While it would be possible to have voiceless speech, it is very doubtful whether the human race would ever have developed such speech to its present usefulness as a communicative tool. And yet phonation is so complicated a process that it unquestionably increases the load placed by civilization upon structures designed for other biological functions. For phonation, man employs a valve which nature intended to use as a guardian of the lungs. If the openings used for air intake were not also those used for food and odors, no valve would have been necessary. But noxious gases and particles of food had to be kept out, and so the larynx was provided. The larynx also seems to fulfill another biological need—that of shutting off the orifice so that the rib cage may be firm enough to serve as a stable attachment for our arms. This may be easily tested by sensing what happens to the larynx when we lift something very heavy—the laryngeal valve closes.

Anatomy of the larynx. The larynx consists of a group of cartilages, muscles, and membranes situated in the respiratory tube just below the pharynx. It is suspended from above by muscles and membranes connected to the hyoid bone which, in turn, is suspended from certain of the structures of articulation. The lowest cartilage of the larynx, the *cricoid*, serves as a rim for the trachea and as a foundation for the other major cartilages, the thyroid and the arytenoids. The *thyroid* is a cartilage shaped like a butterfly with its body forward (to form the Adam's apple) and its wings half closed. The lower wing tips are hinged to each side of the rear of the cricoid by shallow ball and socket joints. The upper tips of the wings are loosely con-

nected by membranes and muscles to the back ends of the horseshoe-shaped hyoid bone. The two *arytenoid* cartilages, roughly pyramidal in shape, sit on the rear edge of the *cricoid cartilage*, an edge of which is raised much higher than the front part of the cricoid. A large fold of muscle (the thyro-arytenoid) joins each arytenoid to the thyroid at the back of the Adam's apple, and the elastic membranes along the upper edges of these muscles are known as the



Courtesy of Clay-Adams Company.

Fig. 3. Front and rear views of models of the larynx, showing the various cartilages.

vocal cords. Several groups of muscles interconnect all of these cartilages and enable the thyroid cartilage to be raised and lowered, and the arytenoids to be turned or slid toward each other, thereby providing the mechanism necessary to bring the vocal cords together as a valve. Besides several other little cartilages, there is another large one, the *epiglottis*, which plays no part in actual phonation but which may alter resonance by narrowing the laryngeal opening. Just above the true vocal cords, and parallel with them, are

the false vocal cords, which may also serve as a supplementary valve. Their coverings, together with the mucous membranes lining the arches between them and the true vocal cords, serve as lubricators.

Voice production. The functioning of these structures is not yet clearly known, and scientists still argue over several points concerning their operation. However, it is pretty well agreed that for normal phonation the entire length of the vocal cords must be brought together. This is thought to be accomplished by the thyro-arytenoids themselves, by the lateral crico-arytenoids (which pivot the arytenoids around so that the rear ends of the vocal cords can be held close together), by the transverse arytenoid (which tends to bring the arytenoids closer to each other), and by the crico-thyroid, which pulls the thyroid cartilage down, thereby accomplishing the approximation of the cords and phonation. Besides the muscles above mentioned there are others, both intrinsic and extrinsic, which coöperate in phonation, but whose action is not clearly understood.

As explained in the last paragraph, the edges of the vocal cords must be brought together in order to have phonation. Nervous impulses from the brain cause the whole laryngeal system to coördinate so that the vocal cords are maintained at varying degrees of tenseness or elasticity. The air pressure which is dammed back by the closure of the vocal cords increases until it is sufficient to force the cords apart, thus permitting a puff of air to escape. This, of course, momentarily lowers the pressure and permits the vocal folds to come together again. The regular repetition of this alternate yielding and recoiling is rapid enough to produce a tone whose pitch depends upon the number of times per second the cords are parted. This tone is thought by some scientists to be a so-called pure tone without harmonics, and by other scientists to be a complex tone with a fundamental and overtones. The latter belief is held by the majority of authorities in the field.

Pitch, intensity, and timbre. The important physical facts concerning phonation deal with the characteristics of the sound produced by the vocal cords—*i.e.*, with the pitch, intensity, and timbre of the vocal cord tone. Pitch seems to be determined by the frequency of vocal cord vibration. When the cords vibrate more swiftly, the pitch rises. This vibration itself seems to be dependent upon the tension and elasticity of the free edges of the thyro-arytenoid muscles. Pitch can also be raised by increasing the air pressure below the larynx or by using shorter lengths of glottal opening. Generally speaking, people with long vocal cords have low voices.

The intensity of the tone produced at the vocal cords is probably proportional to the amount of air pressure held back by the cords and to the width of the opening between them when they are finally forced apart. It depends therefore upon the tension of the vocal folds and the force exerted by the chest and abdomen upon the lungs.

By timbre we refer to that property of a sound which enables us to distinguish one speech tone from another, even though they both have the same pitch and intensity. The vowels *ee* (*i*) and *oo* (*u*) may be clearly distinguished, for example, even though they are sung on the same pitch and with the same intensity. Timbre results from the fact that any complex tone is made up of the fundamental (which gives the pitch) and its overtones, some of which are louder than others. The number and strength of the overtones are considered by many authorities to be of great significance in determining whether or not the voice is pleasant.

Abnormalities of phonation found in speech defectives.

Some abnormalities of the phonation apparatus that are found in speech defectives are: singer's nodes or growths on the vocal lips (aphonia, hoarseness); inflammation of the true or false vocal cords or excessive secretion of mucus due to inflammation of other structures (aphonia, huskiness,

hoarseness); failure of the vocal processes to come together because of overstrain in childhood (breathiness); laryngeal web (aphonia); infantile larynx with very short vocal cords (too high pitch, eunuchoid voice); paralysis (aphonia or intermittent vocalization). There are many others, but these are representative.

A normal larynx may also be used improperly in many ways. If an individual is too tense, the vocal cords may vibrate along only a fraction of their length, thereby producing a high-pitched falsetto. The cleft palate patient commonly employs a quick opening and closing of the vocal lips (the glottal stop or glottal catch) as a substitute for the *k* or *t* sounds. The stutterer may prolong a vowel abnormally, changing its pitch through an octave or more. The hard of hearing may misuse his larynx by forcing his vocal cords so far apart in the effort to hear himself that a temporary muteness results from the muscular strain. The false vocal cords may themselves vibrate, thus introducing a harsh, noisy quality.

Resonation

Biological importance of resonation. We have been careful, in the above description of phonation, to use the term "vocal-cord tone," because, with the possible exception of pitch, all of the characteristics of phonation are affected by resonance. As any trained singer or speaker well knows, it is possible to increase the intensity and carrying power of the voice without increasing the air-pressure or laryngeal tension. Through adjustments of the mouth cavity alone much greater efficiency may be gained. Moreover, through adjustment of the mouth and other cavities above the larynx, it is possible to alter in very striking fashion the quality of the sound which is produced. The result of this cavity alteration is termed "resonance," and a moment's thought will convince the student of its great importance

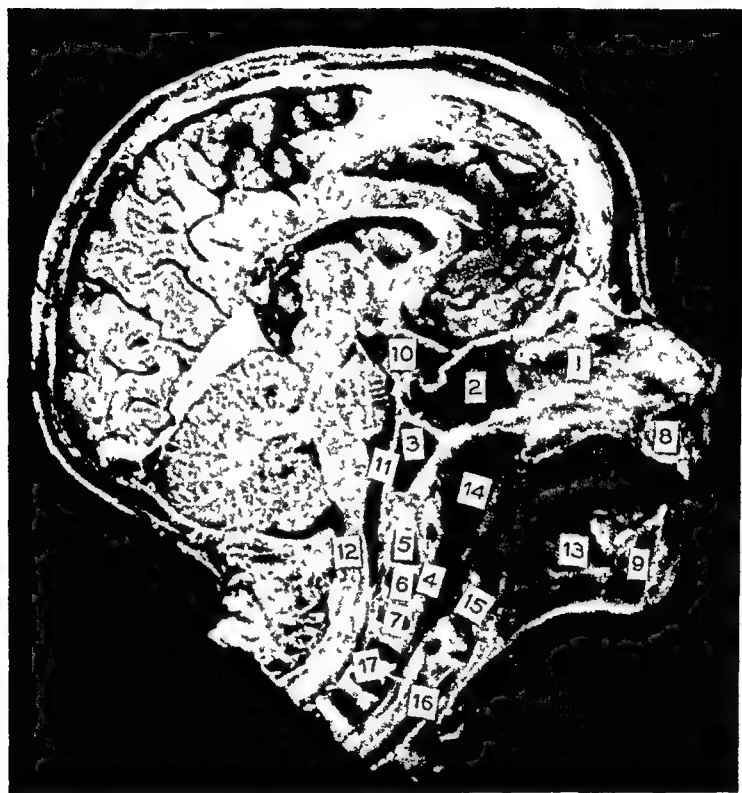
for speech. Not only the peculiar individuality of each person's voice, but also the characteristics which differentiate our vowels from one another, and which provide us with nasals and diphthongs and many other speech phenomena, are due to resonance.

The structures used in resonation. All of the structures used in resonation have biological importance in contributing to the functions of breathing, smelling, chewing, and swallowing. The important resonators, all interconnected, are the pharynx, the mouth, and the double-cavities nose. Other cavities not usually considered to be of much importance for resonation are the larynx, trachea, bronchi, and the sinuses. Resonation is easily understood when one comprehends that the air in any cavity may be caused to vibrate by the application of some outside force. Moreover, the air in any cavity tends to vibrate at a certain given rate, depending upon the size, shape, and number of openings of a cavity, and upon the character of its walls. If a tone is sounded which coincides with the natural rate at which that cavity vibrates, it will be reinforced and amplified strongly by the cavity. On the other hand, if the cavity tone and the outside tone are very unlike, practically no reinforcement will be found.

Functioning of resonators in speech. Since the vocal-cord tone is thought to be a complex tone, having not only a fundamental pitch, but also several overtones, the resonating cavities mentioned above adjust themselves so as to amplify certain of these overtones and to damp out others. Therefore, the sound which issues from the mouth or nose is of an entirely different character from that produced by the vocal cords. Its pitch is the same, but its quality (timbre) and intensity have varied.

We have explained how the resonating cavities amplify certain overtones and thereby change the character of the sounds, but we have not shown how those cavities can be

varied. The mouth may be varied in size by protrusion of the lips, placement of the tongue, lowering of the jaw, and raising of the soft palate. Its front opening, formed by the lips, may vary in shape, length, and width. It may be divided by the tongue into several cavities of various shapes,



Courtesy of Keystone View Company, Inc

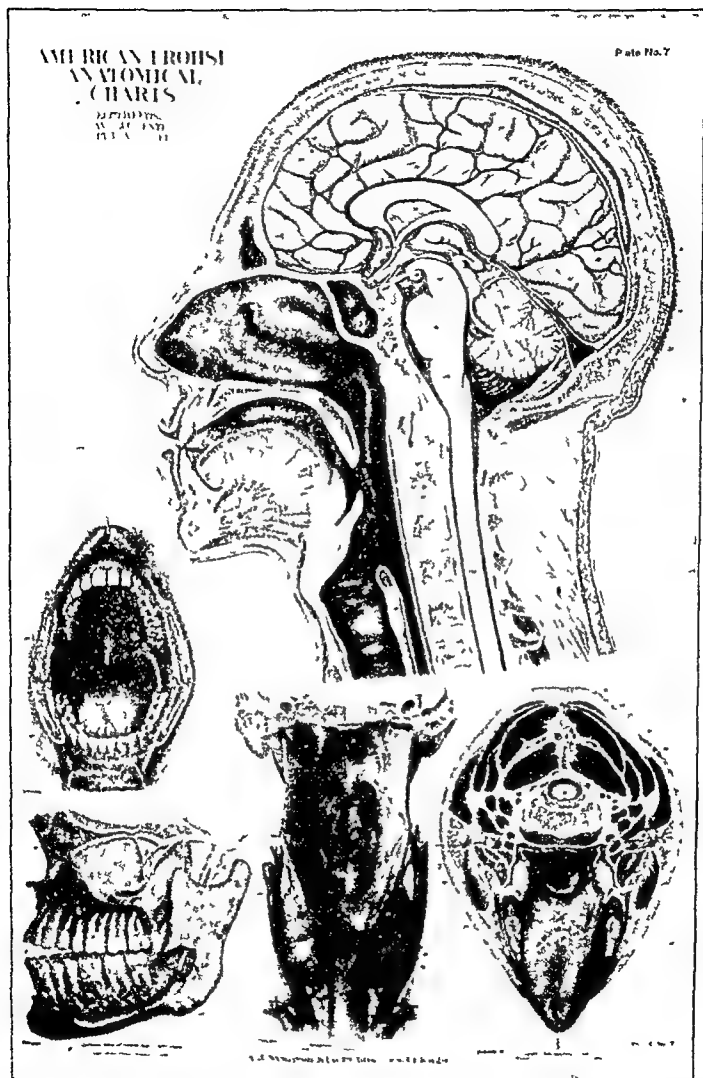
Fig 4 The sagittal section of the head of a child (1) Nasal septum. (2) Body of the sphenoid bone (3) Basilar part of occipital bone (4) Atlas, anterior arch. (5) Epistropheus (6) Third cervical vertebra (7) Fourth cervical vertebra (8) Maxilla (9) Mandible (10) Cisterna interpeduncularis (11) One of the subarachnoid cisterna (12) Cisterna cerebellomedullaris (13) Base of tongue. (14) Nasopharynx (15) Epiglottis (16) Vocal cords (17) Cricoid cartilage The student will also note the cerebral cortex, cerebellum, thalami, medulla, and the course of the spinal cord (From the *Edinburgh Stereoscopic Atlas of Anatomy*, Section II, No 19)

sizes, and openings. The walls of these cavities may be made rigid or relaxed at will. The nose, on the other hand, is a fixed resonator of two tubes, which may be closed off from the other resonators by means of the soft palate, which itself may act somewhat as a sounding board. The pharynx is also very adjustable as to shape, size, and texture of wall. The velum or soft palate may decrease its length by closing off the nasopharynx. The larynx can rise and shorten it from below. Its orifice is the mouth, which, as we have seen, may vary greatly. Through the appropriate adjustment of all of these cavities, certain of the overtones are amplified, thereby producing the different vowels and variations in timbre which we use in speech.

Defects in resonance found in speech defectives. Some resonance inadequacies or defects found among speech defectives are: lack of a hard palate or of a soft palate sufficiently mobile or extensive to block off the nasal passages (cleft palate speech, excessive nasality); growths within the nasal passages (denasality); inflammations of the nose and throat which cause excessive secretion of mucus (hoarseness, huskiness); paralyzed articulators such as the tongue or lips (distorted vowels, thick speech); too tense muscles in the pharynx (strident, guttural, or throaty voices).

Articulation

Contribution of articulation to speech. If phonation contributes most of the speech phenomena dealing with tone, articulation may be considered as the mechanics of speech noises. Articulation deals with the stoppages and constrictions of the breath stream (both with and without phonation), and these form sounds which are not clear enough to be thought of as tones but could be considered as noises. Most of the consonants are formed by articulation, although it must be understood that many of the structures used for



Courtesy of A. J. Nystrom and Company

Fig 5. Drawings showing the sagittal section of the head, anterior view of the mouth, the structures of the upper and lower jaws, the pharynx and velum as viewed from the rear, and a horizontal section of the head at a level just above the tongue.

articulation are also used in resonance. These structures likewise serve the biological functions of mastication and swallowing.

Structures used in articulation. The structures used in articulation are the lips, jaws, teeth, tongue, velum, hard palate, and the back wall of the pharynx. A large number of muscles govern the movement of the lips. These are the buccinator, the depressor and levator anguli oris, the orbicularis oris, the superior and inferior quadratus labii, the risorius, and the zygomaticus. They allow us to protrude, compress, widen, round, bite, and press our lips upward against our teeth.

Muscles of the tongue are the genioglossus, hyoglossus, the four divisions of the longitudinalis linguae, and the styloglossus. They work together to provide the greatest variety of movement permitted any structure of our body. The velum is composed of, and moved by, the azygos uvulae, the pharyngo palatinus, and the levator and tensor veli palatini. The closure of the nasopharynx thus provided is also facilitated by the pharyngeal constrictors and perhaps by the stylopharyngeus. The lower jaw is moved by means of the masseter, geniohyoideus, the temporalis, and the internal and external pterygoid muscles. All of these muscles are paired structures and work together in intricate coördinations.

Vowels and consonants and their classification. Articulation, as has been said, is primarily concerned with the formation of the consonants, and to a lesser degree with the shaping of the resonators which produce the vowels and diphthongs. By *consonant* is meant the speech noise produced by the constriction or obstruction of the outgoing breath stream in some part of the vocal tube. By *vowel* is meant the speech sound or tone whose characteristic auditory quality is due to the influence of the mouth cavities as resonators. By *diphthong* is meant the gliding sound produced by shifting from one vowel to another. By *semi-*

vowel is meant a sound having characteristics of both consonant and vowel. By *plosive* or "stop consonant" is meant that the outflowing breath is completely blocked at some part of the vocal passage, then released as a puff. By *fricative* is meant that the outflowing breath is constricted and expelled through a narrow opening. By *sibilant* is meant a fricative characterized by a hissing sound produced by expelling the air against the cutting edge of the teeth. By a *nasal* is meant that sound produced by lowering the soft palate, blocking the oral channel, and expelling the sound through the nasal passages. By *continuant* is meant that the sound may be prolonged without readjustment of the articulatory apparatus. Thus all sounds which are not plosives are continuants.

A knowledge of the mechanics of speech-sound formation is essential for any speech correctionist. He must recognize faulty mechanics and faulty structure and he must also be able to devise new ways for producing a given sound so as to compensate for oral deformities. Time after time, he must use diagrams, models, and articulatory placement to teach a new sound. It is also convenient for him to possess some knowledge of the classification terminology and phonetic symbols which represent the various consonants and vowels. This information may be found in most of the references, but, for convenience, it is given here in condensed and tabular form.

There are also five diphthongs which frequently occur in English. These are: (1) *au* (*cow*), caused by a rapid shift from the vowel position for *a* (*father*) to that of *u* (*look*); (2) *ai* (*pie*), caused by a rapid shift from the vowel position for *a* (*ask*, Brit.) to that of *i* (*skip*); (3) *ɔɪ* (*boil*), caused by a rapid shift from the vowel position for *ɔ* (*jaw*) to that of *i* (*skip*); (4) *ei* (*pay*), caused by a rapid shift from the vowel position of *e* (*locate*) to that for *i* (*skip*); (5) *ou* (*show*), caused by a rapid shift from the vowel position for

TABLE ONE
THE CONSONANTS IN ENGLISH

<i>Direction and Obstruction of Airflow</i>	<i>Phonetic Symbol and Key Word</i>		<i>Classification</i>
	<i>Unvoiced</i>	<i>Voiced</i>	
Completely blocked by compressed lips: suddenly released as a puff gradually expelled through nose	<i>p</i> (<i>pipes</i>)	<i>b</i> (<i>backs</i>) <i>m</i> (<i>meter</i>)	plosives nasal continuant
⌘ Constricted by being forced through a widening aperture between lips	<i>ʍ</i> (<i>whine</i>)	<i>w</i> (<i>winds</i>)	fricative and semi-vowel
Completely blocked by tongue tip held firmly against upper gum ridge: suddenly released as a puff gradually expelled through nose	<i>t</i> (<i>tapes</i>)	<i>d</i> (<i>dopes</i>) <i>n</i> (<i>noses</i>)	plosives nasal continuant
Completely blocked by back part of tongue held firmly against soft palate: suddenly released as a puff gradually expelled through nose	<i>k</i> (<i>kings</i>)	<i>g</i> (<i>gaudy</i>) <i>ŋ</i> (<i>sings</i>)	plosives nasal continuant

Gradually expelled through slit between upper teeth and lower lip	f (fever)	v (value)	fricatives
Gradually expelled through slit between flat tongue tip and upper teeth, tongue sometimes protruded	θ (think)	ð (thine)	fricatives
Gradually forced through a <u>narrow groove</u> of the <u>tongue tip</u> and against the cutting edge of the upper teeth	s (sinks)	z (zebra)	sibilants
Gradually forced through a <u>broad groove</u> of the <u>front of the tongue</u> and against the edges of upper teeth	ʃ (ships)	ʒ (azure)	sibilants
Blocked by tongue tip against hard palate, then suddenly released by lowering entire front of tongue..	tʃ (chick)	dʒ (judge)	plosives
Directed from rear to an open front cavity through a narrow channel formed by <u>up-thrust tip</u> and partly raised-back of tongue		ɹ (car) r (radio)	palatal fricative or semi-vowel
Directed around the sides of the tongue, the tip being held against upper gum ridge or hard palate		l (later)	lateral fricative or semi-vowel
Constricted by being forced through a widening aperture between up-thrust tongue and front part of hard palate		j (yells)	semi-vowel
Constricted at glottis and expelled through cavities appropriate to vowel which follows it.....	h (hello)		aspirate

TABLE TWO

THE VOWELS IN ENGLISH

<i>Symbol</i>	<i>Key Word</i>	<i>Sector of Tongue</i> <i>Elevated</i>	<i>Nearness to Palate</i> <i>(see diagram)</i>	<i>Shape of Lips</i>	<i>Approximate Jaw Drop</i>
<i>i</i>	(meet)	front	reaches level A	retracted	1/8 in.
<i>ɪ</i>	(skip)	front	reaches level B	retracted	3/16 in.
<i>e</i>	(locate)	front-middle *	reaches level B	unrounded	1/4 in.
<i>ɛ</i>	(petty)	front	reaches level C	unrounded	3/8 in.
<i>æ</i>	(badly)	front-middle	reaches level C	unrounded	1/2 in.
<i>ɑ</i>	(ask) **	front-middle	reaches level D	unrounded	5/8 in.
<i>ɔ</i>	(above)	middle	reaches level D	unrounded	1/2 in.
<i>ɜ</i>	(burn) **	middle	reaches level D	unrounded	5/8 in.
<i>ʌ</i>	(cups)	middle-rear	reaches level C	unrounded	5/8 in.
<i>u</i>	(cool)	rear	reaches level A	rounded	3/16 in.
<i>ʊ</i>	(cook)	rear	reaches level C	rounded	1/4 in.
<i>o</i>	(obey)	rear	reaches level C	rounded	1/2 in.
<i>ɔ</i>	(jaw)	rear	reaches level D	rounded	3/4 in.
<i>ɑ</i>	(father)	none elevated	level shown in relaxed diagram		

* For the front vowels, the tongue is gradually retracted as it is lowered.

** This vowel is pronounced as it would be in Eastern America or in the British Isles.

o (obey) to that of *u* (look). The last two diphthongs are found much more commonly in English than are the pure vowels *o* and *e*.

The above descriptions of the various speech sounds may seem somewhat complicated to the beginning student in speech correction. The truth is that they have been oversimplified. In reality, no definite positions or actions can

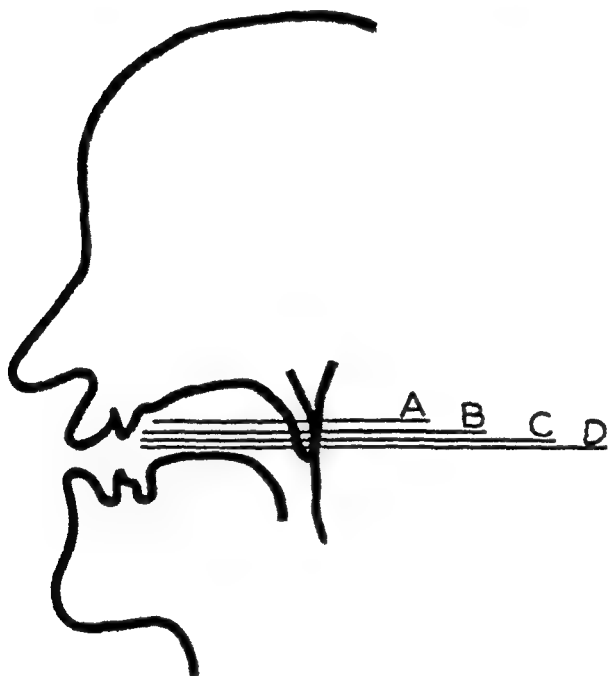


Fig. 6. Diagram of approximate levels assumed by the tip or back of the tongue in producing the various vowels.

be said to be specific to any speech sound. The tongue does not return to rest between each speech sound. The mouth opening, the lip or tongue position for any vowel varies in terms of the sounds which precede or follow it. The place, manner, and duration of obstruction or constrict-

tion used in producing a consonant may also vary according to the sounds that precede or follow it. Some change and shift is constantly occurring throughout the utterance of speech, and utterance is always continuous. Some individuals use one sequence of vocal movements where others will use a different one. Nevertheless, the descriptions are sufficiently standard to approximate those used by the average person, and they provide a basis for the study of the variations which so frequently occur.

Errors in articulation. Errors in articulation account for the handicaps of the largest number of speech defectives. Lispings, lallings, baby talk, oral inaccuracy, foreign speech, delayed speech, cleft-palate speech, deaf speech, and several other varieties of speech disorders are characterized by the use of incorrect obstructions and constrictions of the outgoing breath, thereby producing sound substitutions, omissions, and distortions. Thus the child who says "tandy" for "candy" is using a tongue-tip obstruction instead of a back-tongue obstruction. In brief, the majority of articulatory errors are caused by confusing voiced and unvoiced sounds, by using tongue-tip sounds for back of the tongue sounds, by using lip sounds for the lateral and palatal fricatives, by using nasal sounds instead of their oral equivalents, and by using simpler sounds for those more complex. If substitution occurs, it usually involves another sound of the same classification, such as one fricative for another (*th* for *s*). Organic abnormalities, such as too large a tongue, too tight a frenum, missing or irregular teeth, or a recessive or prognathous lower jaw, can produce articulatory speech defects, although many individuals learn to speak well despite their structural malformations.

Word production. It will be obvious to the student that the preceding description of the nature and functioning of the structures used in speaking is far from being a clear picture of the nature of speech itself. It is too analytical

to allow us to see the process as a whole, and no description could possibly be adequate to the overwhelming complexity of movement that goes on in the production of a word. However, in crude and sketchy fashion, we will try to show that speaking a single word involves a definite sequence of behavior.

You are asked to read aloud the word "gap." The cerebral cortex of the brain reacts to the nervous impulses coming upward from the eyes by organizing the pattern of nervous impulses which must be sent down to the organs of speech. This organization begins in the side of the brain opposite to the preferred hand. It probably consists of an interaction between the visual, auditory, and motor association areas which results in the preparation of the motor areas on both sides of the cortex to send a series of nervous impulses down to the proper speech muscles at the appropriate times.

For example, at a certain moment, both motor areas send down volleys of impulses to the muscles of the lips, velum, larynx, thorax, and abdomen. The back of the tongue humps up to make contact with the velum, which rises, shutting off the nose. At the same time, other activity is going on. The lips part slightly; the tongue-tip anchors itself against the lower teeth; the abdominal muscles contract, forcing the diaphragm upward; the thoracic muscles relax, thereby forcing air up the shaft of the trachea; the arytenoids are brought together, and the vocal folds are tightened so that their vibration produces a tone; this tone together with its rush of air dams up behind the tongue.

Suddenly a new volley of impulses comes down from the brain. The tongue is pulled down, the jaw drops, and the first sound (*g*) of the word has been produced. The cords continue to vibrate and the tongue adopts a new low position in the open mouth, thereby producing the second sound (*a*). The cords cease to vibrate, but the jaws and lips

come together, the tongue relaxes, and the current of air dams up behind the closed lips. Finally the lips open, and with a little explosive noise, the air escapes. The word "gap" has been spoken.

It must be clearly understood that each initiation and cessation of activity is carried out under the timing pattern and sequence of volleys of nervous impulses from the brain. Moreover, each of these activities involves speech structures that are paired. In one sense we can be said to have two tongues and four lips, and two of all the speech muscles. Those muscles on the right side of the body receive their nervous impulses from the left side of the cerebral cortex; the muscles on the left, from the motor areas on the right side of the brain. And yet, if such structures as the tongue are to work as units, it is obvious that both halves must get the appropriate impulses at the same instant. Experimentation has shown that this is exactly what happens in normal speech, although in stuttering the paired muscles frequently do not receive their volleys at the same time or in the same amount. The coördinating agency which compels the motor areas on the two sides of the brain to send equivalent volleys at the same time is thought to reside in the side of the brain opposite the preferred hand. In view of the complexity of the speech act, then, we can only wonder that there are so few speech defectives. As one phonetician phrased it, "If you want to perform a miracle, say the word 'pup.'"

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3

The Development of Speech

Although the embryological development of the speech structures is of great interest to the student of speech correction, since many organic abnormalities such as cleft of the palate are traceable to this period, our study of the development of speech must begin with birth. No teacher of speech correction should be ignorant of the manner in which speech develops, and no parent should be without a knowledge of how to teach a child to talk. The amazing ignorance and the ludicrous methods displayed by many parents during the infant's first year of speech-attempt no doubt account for many speech defects and much delayed speech. The training which student teachers receive in the teaching of such language functions as reading and writing points out the great necessity for training in the teaching of talking. It is true that most of us learn to talk, but much of our success is gained in spite of the methods used rather than because of them, and too many of us never learn to speak well.

The birth cry and other reflexive sounds. Most parents when questioned will reply that their child learned to talk at about the age of one year, but the student of speech knows that the child is learning to talk when he draws his first breath and lets out the yell that announces his arrival. He is learning to talk as he sucks and swallows, belches and smiles, for movements used in these activities are used in

speech. Even when the infant holds his breath or listens to a sound he can be said to be learning to speak.

However, many of these activities are reflexive in nature. The birth cry itself seems to be nothing more than the automatic intake of air across taut vocal cords. During the first two weeks, most of the infant's vocalization is of this sort. It seems to have no intent or meaning. Variations in intensity account for practically all the variety which can be heard in the squall. Most of the vocalization occurs during pain, hunger, cold, or some other discomfort, but the nature of the irritation cannot be distinguished from the type of squall.

Between the second and fifth weeks, according to some observers, these squalls become differentiated to denote particular types of discomfort. Hunger is represented by the vowels *a* or *ai* and by sucking movements which interrupt the vowels to form *m* and *w* sounds. Pain usually is represented by the nasal vowels or diphthongs *i*, *æ*, or *ei*. During the same period, grunts and guttural back vowels seem to indicate relief. All of this vocalization is usually accompanied by bodily movement.

Babbling and vocal play. The next period of speech development is marked by the appearance of babbling or vocal play. Vocal play appears in some children as early as the third week and it increases steadily during all of the first year, gradually dying out as the child acquires more and more meaningful symbols, and disappearing about the age of four years. It seems to come, not from the squall or wail, but from the sounds of relief and contentment. The child apparently enjoys the performance and accompanies it with a wide variety of other movements. Parents call it "cooing," or "gurgling."

Although the first sounds used in this vocal play are the vowels, with the various *a*-sounds being most frequently heard, the order with which the various sounds appear

varies greatly from child to child. At first the child seems to play with his vocalization of a single vowel, varying its intensity, pitch, and nasality. But very soon he is phonating all the vowels and vowel shadings used in every language, and some vowels which are foreign to any known human speech. The vowels are combined with one another, and soon the child begins to repeat over and over some of the sucking and swallowing movements which are part of the gross activity that accompanies the vocal play. Thus the consonant sounds are formed.

Although individual variations occur, the first consonants used in vocal play are those made by the lips, the labials *p*, *b*, and *m*. They at first precede the vowel (*ba*); then precede and follow (*bab*); and only occasionally and at a much later stage are they found in the final position (*ab*). The majority of children first acquire these labials, then the dentals (*t*, *d*, *n*), the gutturals (*k*, *g*, *ng*), and finally the complicated sounds such as *r* and *l*.

With these consonant-vowel combinations there appear hundreds of cooing, gurgling, and clicking sounds, and other odd noises. American children have been heard to produce perfect Germanic gutturals and unlauded vowels, sounds used exclusively by certain African tribes, and combinations of consonants so complex ("*dzhi*") that no phonetic transcription was possible. Most children of eight months have practiced in their babbling all the sounds which they will use later in life and many additional ones. As we have said, this vocal play is pleasant to the child, and it accounts for much of the gibberish of which young children seem so fond even in the years after they are able to speak.

Socialized vocalization. The next major advance in the use of speech material may be called the stage of socialized vocalization, and it begins, in the majority of children, about the fifth month. The child begins to use his vocalization (with more vowels than consonants) for getting atten-

that which is seen or heard, certainly no such imitation occurs. It is true that during the last months of the first year, most children seem to make some attempts to reproduce movements which they witness, but rarely are they exact. Imitation, as used in the larger sense to denote attempted reproduction, seems to be motivated by the desire to perpetuate the stimuli which intrigue one's interest. It is the child's way of maintaining his interest. The child's memory span is very weak and short, and to compensate for this deficiency he seeks to perpetuate the stimulus by repeating it. This accounts for the doubling and repetition of syllables in the vocal play and for the persistence with which he pounds the rattle on the table.

When the process of speech imitation is studied, we discover that it begins when the parent starts to imitate the child. This may sound paradoxical, but its truth will be apparent when the situation is defined. During vocal play the child happens to be repeating the syllable "*ma*." The hearing of the sound interests him, and so he repeats it again. Suddenly he sees his mother, and this interrupts his response to his own stimulation, and so he lapses into silence. But the mother, unaware of the perfection of her technique, says to him, "Mama? Did you want mama?" and immediately the interesting stimulus is there again. He wishes it to continue, and so he makes the same vocal coördinations he made when alone, and again the same interesting sounds are present, "*mamaamaama*." Whereupon the mother rushes to the phone to tell her husband that the child has spoken his first word.

This, of course, is not strictly true, for only when the child uses the word as a definite tool of communication with such a meaning as "Mother, come here," or "Mother, lift me up!" can we say with certainty that the child has acquired his first word. Nevertheless, the process of word acquisition has been described. The first step in teaching

a child to talk should be the imitation of the sounds being made by the child during his vocal play. This should be preceded, if possible, by the parental imitation of other movements, such as pounding the table. If the child can be stimulated to return to his own former pounding by watching the parent pound, half the battle is won, for the first requisite is gained: the perpetuation of a stimulus given by another person. In imitating the speech of the child, the parent should seek to interrupt the child's activity before it is completed. For example, if the child is saying "*da-da-da*" over and over, it is wise to interject the parental "*da-da*" as soon as the child's first "*da*" has been produced. This will produce the most favorable conditions for getting the child to return to his own former activity, and usually he will maintain it much longer and much more loudly than he usually does. At first only a few sounds should be used in this way, preferably those which later can be used to represent the people doing the training. Thus the child will acquire "*mama*" in a situation which always represents her presence, and it is wise for her to say the word whenever she picks the child up. Thus the child will come to associate the interesting sound with the person, and it will thereby come to have meaning.

The child should be given such training until he responds consistently with eager repetition whenever the parent has interrupted vocal play by imitating the child's vocalizations. After that it is wise for the parent to utilize the silence periods which occur during the babbling as intervals of strong stimulation with the sounds previously used by the child. For example, the child has been babbling, and suddenly becomes silent. The parent then attracts his attention and repeats "*mamama*" (or any other syllable which the child has been practicing). If the child will respond to this stimulation by attempted repetition, a second step in word acquisition has been taken. After considerable

training involving the practices of both steps, being careful to pick the appropriate times, the child will suddenly surprise everyone by using the word very meaningfully, perhaps accompanying it with the gesture of reaching. In similar fashion, other early words may be taught.

It will be found that, in the majority of cases, the first words are mere adaptations of vocal play activity. How, then, does the child come to speak words which he has never practiced? This question is easily answered by recalling the second step wherein the child makes a speech response to the parent's stimulation. After the child has had some experience in repeating the parent's imitations of his own speech, he will readily make attempts to repeat words which are not imitations of his vocal play. These attempted reproductions are never exact—the child will say “ba” for “ball”—but they are evidence of his interest and ability. If the child can be made to say “ba” when stimulated, and is thereafter given the ball, he will come to associate the sound with the object and a new word has been learned. Since children understand and react intelligently to many words long before they can speak them, frequently all that is needed is to get the child to say them.

As we have said, most children learn to talk in spite of poor parental teaching. Common errors made by parents in the teaching of talking are: stimulation at the wrong time, over- or under-stimulation, the wrong type of stimulation, disregarding the necessity for motivating speech attempt, and improper control of association. These will be discussed in the chapter on delayed speech.

The one-word sentence. The next stage of speech development is known as the one-word sentence stage. The new-found words are always used to express whole meanings. “Bye-bye” means “*I want to go for a ride in the automobile.*” Through the use of gestures (which, by the way, the child understands and uses long before he under-

stands or uses speech) and inflections, and the situation-as-a-whole he makes his meaning clear. The same word can be used to express many meanings, for the child is not expressing concepts but his attitudes. Most of these words are names, since even the verbs are used as names for desired activity, but there is a large number of interjections as well.

Vocabulary and sentence structure. Vocabulary increases rapidly, being somewhat slowed up about the time the child learns to walk, and by the end of the second year the child should have acquired about two hundred words. Figures for children who were probably somewhat superior to the average are as follows: 10 months, 1 word; 12 months, 3 words; 18 months, 22 words; 21 months, 118 words; 24 months, 272 words. Generally speaking, children with normal intelligence, hearing, and home environment should be saying some words by the end of two years.

About the time that vocabulary growth seems to spurt, children begin to use word combinations. The first word combinations or sentence-phrases are those of the noun-verb type ("mama go"). From about two years onward, an excellent criterion of speech progress is the average number of words used per speech response. The averages at two years should be about 1.7 words per response; at 3 years, about 3 words; and at 4 years, about 4 words. Simple sentences appear first, next phrasing, then compound, and finally complex forms are used. Articles, auxiliary verbs, prepositions, and conjunctions seldom appear before the third year. Boys are usually somewhat slower than girls in acquiring first words, in vocabulary growth, and in sentence length.

Causes of delayed speech. We now list the factors other than improper teaching methods which may account for retarded speech development. They are: defective hearing, low intelligence, auditory aphasia, poor motor coördinations,

such as those which exist in spastic and other paralytic individuals, illness sufficiently severe to interfere with the necessary vocal play of the first year, shift of handedness or confused hand preference, necessity to learn two languages, association with twin or child of own age, lack of motivation, negativism, blindness, and poor economic environment.

The speech development of children during the years from two to seven shows a relative decrease in emotionally toned responses, in incomplete sentences, in vocal play, in exclamatory sentences, and in sound substitutions, omissions, and distortions. On the other hand, questions, answers, adapted information, remarks about other people and things, the amount of talking, negative remarks, and the use of the words "we" and "our" as indices of socialization, all increase with chronological age.

Mastering the various speech sounds. Of great interest to the student of speech correction is the maturation of the ability to use the consonant sounds. Although, as we have said, the child practices all of the sounds during his babbling, his mastery of them in true speech seems to be somewhat dependent on chronological and mental age. In general, we may say that the first sounds to be mastered are those that involve a few large and coarse movements rather than many small and delicate adjustments, those that are easily seen rather than those whose movements are made in the back of the mouth, those whose frequencies are closer to the frequency of the vowels rather than those of the very high frequency ranges, and those involving a few of the speech organs rather than those which demand the use of all.

Thus the first sounds mastered are the vowels, then the labials, then the dentals and gutturals (front- and back-tongue sounds, *t, d, n, k, g, ŋ*), then the complicated lip and tongue sounds (*f, v, l, r, s, z, ʃ, ʒ, dʒ, tʃ*), and finally the

blends (*st*, *gr*, *bl*, and so on). The ages at which these sounds are mastered completely are given for the average child: labials at three years, dentals and gutturals at about three and a half to four years, the *f* and *v* at about five years, the complicated tongue sounds during the sixth year, and the sibilants and blends during the early part of the seventh year. These sounds, however, are mastered much earlier by children who have been given definite training.

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4

Recognition and Prevention of Speech Disorders

Definition. Many definitions have been used in the attempt to differentiate normal from abnormal speech, but none of them is completely successful for the very good reason that no clear-cut distinction can exist. Perhaps the best definition is as follows: *Speech is defective when it deviates so far from the speech of other people in the group that it calls attention to itself, interferes with communication, or causes its possessor to be maladjusted to his environment.* All speech deviations are not, of course, speech defects. There are thousands of ways in which the sound of *s* may be produced, and not only do so-called normal speakers differ from each other in their speech sounds, but they are not consistent in their own speech. The speech difference has to be so conspicuous that other people notice it. Communication may be accomplished, but only despite the difference. In the fact that speech differences cause their possessors to be maladjusted lies the theme of our next chapter, which sketches the contribution of speech peculiarity to the warping of personality. The definition in itself is clear evidence of the seriousness of a speech handicap—a seriousness which few parents or teachers have appreciated.

Several terms have been used to label these speech differences. Certain authorities intensely dislike the term “speech defective,” even though they consent to use the

corollary term "speech defect." They use the phrase "children with speech differences or speech disorders." In these chapters the terms will be used indiscriminately.

Classification. In terms of our definition, we find that speech defects or speech disorders divide themselves into four large categories: disorders of rhythm, articulation, phonation, and symbolization, according to the types of symptoms shown. Many other classifications, of course, may be and frequently are used, and other terminologies are common. However, in our presentation we will use the most common classification, that of the symptoms.

Under disorders of rhythm we include *stuttering* (stammering), the disorder characterized by blockings or spasms, by repetitions and prolongations of words, syllables, or mouth postures, all of which (together with the contortions and devices used to postpone, disguise, start, or release their speech abnormality) produce interruptions and breaks in the rhythm of speech; and *cluttering*, the disorder produced by too rapid a rate of speech characterized by slurred and omitted syllables and consonants, improper phrasing, and speech sounds distorted by speed.

Under disorders of articulation we include all those disorders characterized by the substitution, addition, omission, and distortion of the speech sounds. There are many somewhat synonymous and overlapping terms in common use for these disorders, among which we can name *baby talk*, a disorder with no organic basis but characterized by stereotyped substitutions similar to those used by the normal child in the early stages of speech development; *lalling*, characterized by defective *r*, *l*, *g*, *k*, *t*, *d*, or *n* sounds, and largely due to inactivity or sluggishness of the tongue; *lisp*ing, a disorder of the sibilant sounds and characterized by the substitution for the *s* sound of *th* (lingual lisp), *sh*, or a similarly distorted *s* or *z* (lateral lisp), *t* (occluded lisp), or the nasal snort resulting from the attempt at making an *s*

through the nose (nasal lisp); *oral inaccuracy and sound substitution*, due to improper training or faulty speech structures.

Under disorders of phonation we have three major divisions, disorders of pitch, of intensity, and of timbre or voice quality. Typical pitch disorders are the *monotone*, the *shrill voice*, the *basso profundo*, and the disorder characterized by *stereotyped inflections*. Typical disorders of intensity are *aphonia*, the lack of any voice, often characterized by breathy whispering; too loud or *strident* a voice; too *weak* a voice; and the voice disorder consisting of *irregular or stereotyped intensity changes*. Under disorders of voice quality we find two very frequent types, *hypernasality* (including cleft palate) and *hypo-nasality*, and a multitude of other types which have been described in the literature by as many names as there are appropriate adjectives. Among these we will mention the *pectoral*, the *guttural*, the *orotund*, the *harsh*, the *husky*, and the *hoarse* voices.

Under the disorders of symbolic formulation and expression we have that disorder of the linguistic aspect of speech known as *aphasia*, which is characterized by the inability to comprehend, formulate, or express certain ideas through speech. It is usually due to injury to or disease of the central nervous system, and is seldom found in most school systems.

The above sketch of the various speech disorders is not complete, and certain disorders such as foreign speech, cleft palate speech, and spastic speech will fall under more than one heading, but the scheme is adequate for the identification of all the cases usually met with in educational institutions.

The relative frequency of the various speech defects is still a matter of some dispute, but it is probably safe to say that of five thousand cases of serious speech defect

approximately twenty-five hundred will be articulatory cases, fifteen will be aphasics, and the rest will be about equally divided between disorders of rhythm and phonation. The preponderance of the articulatory defects is even more marked when the large number of oral inaccuracy (or mild articulatory) cases is included. Research has shown that almost half of all speech defects fall in the last category.

Prevention. These estimates point very clearly to the need for remedial speech work in the schools. Authorities generally agree that the articulatory disorders yield quickly to intelligent treatment, especially when it is administered in the early years. Even in spite of the general refusal of the public schools to accept the responsibility for speech retraining, a large number of elementary teachers are doing some type of speech correction in a rather random and haphazard fashion, and they get results that are astonishing when their ignorance of therapeutic techniques is taken into consideration. With very little training and added information, any good elementary teacher could clear up the majority of her articulatory cases.

Moreover, a large share of the other speech disorders will respond to intelligent teaching. At the present time the stutterers and voice cases are far too frequently the victims of well-meaning but sadly ignorant teachers. What the teaching profession needs is information and training. Progressive teachers colleges are recognizing this need, and we may hope that the time will come when all elementary and speech teachers will have had enough preparation to enable them to help the forgotten speech cripples. We may hope too that the time will come when school administrators will insist upon speech surveys or routine speech examinations in their schools so that they may be made aware of the number of children so handicapped. Finally, we may hope that special supervisors in speech correction will be placed in the larger systems to take care of the more diffi-

cult cases, to give counsel and supervision to the teachers, and to insure the adequate dissemination of information tending toward the prevention of speech defects. All of these hopes are finding some fulfillment today in progressive school systems, and the trend toward adequate educational care of the speech defective is showing remarkable growth. The college and university speech clinics will continue to serve a very useful function in the training of these teachers and in providing advisory services of diagnosis, therapeutic recommendations, and general supervision, but they cannot possibly accept the whole responsibility for the treatment and elimination of the speech abnormalities which handicap so large a share of our population. The same truths hold for the special speech-correction teacher. She cannot accept the entire burden, but must handle the more difficult cases and work with the regular classroom teacher in solving the problems of speech-defective children. Finally, all of these agencies must coöperate in the dissemination of valid information to the general public.

As the results of the great educational campaign against tuberculosis have shown, the most important agency of prevention is information concerning the causes, nature, and development of the disease or disorder. The woeful ignorance of most parents and teachers with regard to the causes, nature, and development of their children's speech disorders is certainly a very large part of the reason so many of them arise and continue to develop. Therefore, we list here the most important causes of the various speech disorders. Others will be mentioned in the chapters dealing with their treatment.

There is no single cause responsible for stuttering. Instead, there seems to be present in the large majority of instances two sets of causal factors, predisposing and precipitating. Among the many predisposing causes are: stuttering in the family history, birth injuries, high fevers during onset

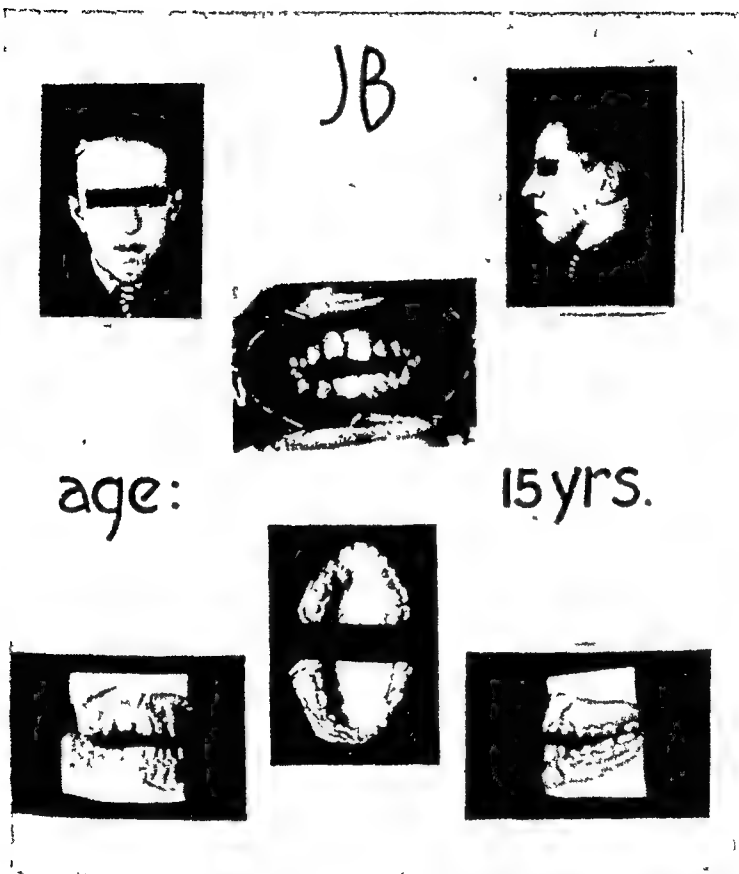
and development of speech, retardation in motor coördination, thyroid medication, shift of handedness, and prolonged emotional strain. The instability thus produced is thought to be ineffective until some event or influence precipitates the disorder, and the child begins to show the primary symptoms of stuttering (repetitions and prolongations). Among the precipitating factors are: physical or emotional shocks, cumulative pressure or insecurity, use of the non-preferred hand for writing or other fine skills, speech conflicts (such as fear of interruption, confession of guilt, speech competition, speech exhibition, and so on), and prolonged illness or anaemia.

Teachers and parents should know that there are two stages in the development of stuttering, since if a child can be kept in the primary stage of the disorder his chances of outgrowing it (without clinical help) are much greater than they are if he develops the fears and habitual tricks of avoidance, postponement, disguise, and release which characterize the second stage of the disorder.

The causes of the articulatory disorders are of two types: functional and organic. Among the latter are: striking deviations in the size, length, or shape of the palate or the tongue; the presence of dental irregularities or of an overshot or undershot jaw; the presence of scar tissue, paralysis, or pathological tissue; chorea, myxedema, and lesions in the central nervous system. Hearing deficiencies produce errors of omission, substitution, or distortion of speech sounds, and so also does mental deficiency. Among the functional causes are: emotional maladjustment, parental baby talk, improper stimulation during the early years, imitation, poor sound discrimination, short auditory memory span, and the lack of proper speech standards in the home.

As in the articulatory disorders, the causes of the voice disorders (phonation) are both functional and organic.

The more common functional causes are; association with other people with similar voices; improper breathing patterns; the use of an improper and unnatural pitch level;



Courtesy of Dr. Kurt von Frowein.

Fig 7. A child in urgent need of orthodontia. This child omitted *f* and *v* sounds and had a lateral lisp.

emotional conflicts and strain; overuse and overstrain of the voice; change of voice due to puberty; poor pitch discrimination. Among the common organic causes of voice

Parents and teachers should know the manner in which speech sounds develop. They should realize that certain sounds are not acquired by the child until relatively late—that there is a certain sequence to the development of speech-sound acquisition. Hence, it is inadvisable to work with a preschool child's lisp. Nature intended the child to develop the *s*, *r*, and *l* sounds much later than the preschool years.

Parents and teachers not only should be able to recognize the appearance of the functional causal factors when they begin to influence the speech of the child, but also should be alert to the opportunity presented by modern orthodontia and surgery in remedying organic conditions which in the past have defied all medical efforts. The remodeling of teeth, palate, and jaw is now so well developed in its methodology that very few children should have articulatory defects due to malformations of such structures. But the work must be done when the child is young. If parents and teachers could but realize how effective speech correction is when the child is young, and how laborious a few years later, they would never ignore the child's speech needs or postpone the appropriate treatment. Speech defects should be prevented, not cured.

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5

The Speech Defective

The primary concern of speech correction is the person. . . . It is not enough to know what sort of a speech defect a person has. In addition, one should know what kind of a person has a speech defect. The speech defect has no particular meaning apart from the person who presents the defect. We are not interested in speech defects but in speech defectives.¹

In these words, Travis expresses the reason for this chapter. Speech correction is but one small area in the field of clinical psychology, and the speech correctionist who thinks that he deals with lisping rather than lispers, and with stuttering rather than stutterers, will find discouragement at every turn. It is true that many of our therapeutic techniques are focused directly upon the symptoms and etiology. It is also true that the principles of retraining children who substitute *t* for *k* are stated in rather general terms which may be applied to the majority of such cases. Yet the mere fact that he who guarantees a "cure" in speech correction is immediately labelled as a "quack" would seem to indicate that there is more to the problem than an application of corrective rules. The successful speech correctionist soon learns to study his students, to fit his therapy to their needs, abilities, and limitations, and to help them solve the personality and behavior problems that tend to

¹ Travis, L. E., "A Point of View in Speech Correction," *Proceedings American Speech Correction Association*, Vol. 6, 1936, page 1.

interfere. After all, no speech correctionist ever eradicates a speech defect. The speech defective himself must do it. If he succeeds, it will be because his positive assets outweigh his liabilities. It is the task of the speech correctionist to develop and use the personality assets and to decrease or prevent the liabilities of personality from interfering with speech reëducation.

Personality and behavior problems as causes and consequences of speech defects. Although in this text we have used a symptomatic classification of the various speech disorders, another common classification uses two categories, organic and functional. The latter of these always includes a division labelled "Psychogenic," "Emotional," or "Neurotic" speech defects. In our chapter on the recognition and prevention of speech disorders, we cited emotional conflicts as causes or as influences contributing to the severity of articulatory, rhythmic, and voice disorders. These observations point to the importance of personality and behavior problems in producing speech disorders. The literature is thronged with illustrative cases, but we cite two that are more clear cut than those usually found.

Just before school opened after the holidays, C. K., a Junior High School teacher, age 38, was jilted by her fiancé. She had never been able to maintain discipline among her students and had not enjoyed teaching, according to the report of her principal. A slight cold caused her to lose her voice completely. Two months later, she was still unable to speak above a whisper, although the physician's report stated that no inflammation or other pathology existed. He diagnosed her disorder as hysterical aphonia.

A. T., a girl of 15, suddenly began to lisp and substitute *w* for *r*. She had previously spoken without any articulatory defect for at least six years, although her first-grade teacher declared she had some kind of speech disorder when she was seven years old. Three months later the disorder disappeared as suddenly as it had appeared. The only explanation which seemed to have any evidence to support it was that the girl knew of her

parents' plan to get a divorce and adopted the symptoms of an earlier age level when no family conflict was threatening to disrupt her security. At any rate, the disorder disappeared as soon as a parental reconciliation was effected.

We must also realize that a speech defect is such an outstanding difference that it can beget its own personality problems and emotional conflicts. It is often difficult to determine whether the emotional conflict is the cause or the consequence of the speech defect. But whether or not a certainty of diagnosis is present, it is necessary to remodel the person as well as to remove the defect. Solution of personality and behavior problems, even those which may seem to have no relationship to the speech defect, will facilitate speech-correction therapy. Every speech-correction case must be studied and treated as a person.

The study of personality. There are many ways of getting to know another person well enough to help him with such a problem as a speech defect. Autobiographies, interviews, and many other devices provide avenues of exploration. Unfortunately, the information procured through such methods is worthless unless it can be interrelated so as to give an organized picture of the person. A mass of disorganized historical facts is not a history, nor is a scattering of environmental data a geography. Some form of organization is likewise necessary in the study of personality. Despite the risk of creating certain artifacts, we have found it clinically convenient to organize and orient our personality information with respect to the following three questions:

1. What marked differences of physical appearance, behavior, or environment distinguished this person from his associates?
2. Which of these differences were approved, which were penalized, and by whom?

3. How did this person react to this approval or penalty?

If our information is sufficient to give an adequate answer to all three questions (at each of the various age levels or stages of social interaction), we will have gained an excellently integrated picture of the person possessing the speech defect. Although the preceding method for integrating personal data is the result of clinical technique, theoretical justification may be found in its defense. There are almost as many definitions of personality as there are authors who have written about it, yet the majority of them concern themselves with "traits," "reaction tendencies," and "adjustment." These terms indicate that clinical psychologists and psychiatrists, however they may phrase their common problem, are concerned with: (1) physical, environmental, and behavioral differences, (2) social approvals and penalties, and (3) reactions on the part of the individual to these penalties or approvals. In other words, personality is based on *evaluated individuality*.

The importance of physical, environmental, and behavioral differences. Individuality itself is based upon the ways in which a person differs from his associates. Those characteristics which he possesses in common with all the other members of his group contribute little to his personality. A white skin will not affect his personality development unless he numbers among his associates someone who is not Caucasian. Surpassing beauty, low intelligence, a long nose, pronounced athletic ability, a hearing defect, an ability to use picturesque language, extreme shyness, a speech defect, and many other differences can affect personality development if they set the person apart from his fellows.

Twenty severe stutterers undergoing treatment by the author were studied very intensively through interviews,

autobiographies, conferences with parents and associates, and other devices. Among other results, it was found that many differences in addition to their speech defect had influenced the development of their personalities. Some of those differences which seemed most determinative of their insecurities were: protruding teeth, effeminacy due to the influence of seven older sisters, lack of sufficient spending money to maintain position in exclusive girls' school, a habitual facial grimace (tic), extremely short stature, illegitimacy, a father in an institution for the insane, red hair, and a reading disability. On the other hand, certain differences were viewed as securities, and among those which seemed most significant were: athletic ability, personal beauty, ownership of a pony and many playthings, pronounced musical talent, prestige of having traveled widely, younger playmates, a brother who was a prize fighter, and *high intelligence*. *It may be pointed out that, in each case, the difference in itself was not so important as its interpretation by the speech defective's associates. In some instances, the same difference was interpreted by one speech defective as an asset and by another as a liability.*

Since individuality depends upon the persons who are the speech defective's associates, we must know something about his companions at the various age levels. At the pre-school level, these are largely confined to the father, mother, brothers and sisters, servants, relatives or friends of the family, and a few playmates. When the child enters school, the teacher and schoolmates may entirely alter the pattern of his differences. Later on, other new associates will enter the person's sphere of social, educational, sexual, or economic contacts, and these will either create new differences or accentuate the old. Each of us recognizes that our personalities vary somewhat with the group we join. We are not the same persons to our parents that we are to our students. In studying the speech defective, then, we

must know his associates if we would recognize the differences about which his personality was built.

A speech defect is naturally an outstanding difference. The majority of us speak without breaks in rhythm, peculiar speech sounds, or inadequate tones. Although small chil-



Fig 8 A severe stutterer whose facial contortions were interpreted as a difference about which marked personality problems developed

dren do not tend to perceive a speech defect as quickly as adults, their games and activities depend upon communication, and the speech defect is usually discovered sooner or later. Occasionally we meet a child from a family in which most of the other members have a similar speech defect. Again, we find cases in which the parents have grown accustomed so gradually to a child's defective speech that they fail to recognize it. Children from these families will be likely to develop personality and behavior problems when they first enter school. A speech defect must always be perceived by others before it can become a significant difference.

Penalties and approvals. The second of the three questions previously mentioned in this chapter asked what penalties or approvals by the person's associates contributed to his personality problem. This question is necessary because personality is not merely individuality but *evaluated*

individuality. Differences in themselves are not of vital importance to their possessor. They assume their significance because they are judged or evaluated by his associates. They may be judged as assets, as liabilities, or as neither one. If they are evaluated as assets—as helping to fulfil the desires of his associates—the group will tend to welcome him. If they are judged to be liabilities, the group will tend to reject him. Thus approval and penalty are the result of the group's evaluation of the differences the individual possesses. Fortunately, most groups base their final rejection or acceptance of an individual bidding for inclusion upon more than one difference. They note all of his liabilities and all of his assets, and if the latter outweigh the former, he probably will be accepted. Thus it is possible for a severe speech defective to go through life with a minimum of rejection, even though he never overcomes his liability. Moreover, different groups will evaluate a speech defect in different ways. A debating society would evaluate it as a much greater liability than would a baseball team. The group will accept the speech-defective's difference if its members feel that it is not conspicuous enough to penalize them socially, thwart their free communication, or cause them uncomfortable emotional reactions. If it is overshadowed by other differences, such as a good sense of humor or an ability to listen effectively, it will be tolerated, and its possessor accepted. Rejection, acceptance, and toleration are the three possible resultants of evaluating a difference. If we are to understand the speech-defective's problem, we must know what rejections, tolerances, and acceptances he has met, and in what groups or through what individuals they have occurred. Many types of penalties are used by society to ensure conformity and to prevent the liabilities of any one individual from handicapping the other members of the group. Some illustrative penalties from stutterer's autobiographies follow:

Most clerks always look away when I get stuck and begin to force. It always infuriates me that they don't even have the decency to look at me. Once I even went to the manager of a store about it and he looked away too.

My father wouldn't ever listen to me when I stuttered. He always walked off. I finally got so I'd say everything to him by having mother give him the message.

People do not usually laugh at my other kinds of stuttering, but when I begin to go up in pitch, they always smile or laugh right out loud. I was phoning a girl today and hung up when I heard her snickering.

My mother always hurried to say the word for me whenever company was in the house. I often asked her not to but she couldn't help herself. It used to shame me so, I'd go up in my room and cry and I never went visiting with them. Sometimes I'd eat in the kitchen when we had strangers come for dinner.

The other boys in the school used to call me "stuttercat" and imitate me whenever I came to school. At first I always managed to be tardy and stay after school to avoid them, but my folks got after me and then I began to fight with them. I got to be a pretty good fighter, but the bigger boys always licked me and the teacher punished me when I hit the girls. I still hate girls.

After I came to high school from the country, everybody laughed at me whenever I tried to recite. After that I pretended to be dumb and always said I don't know when the teacher called on me. That's why I quit school.

Every time I'd ask for a job a funny look would come over their face and some of them would say no right away even before I finished what I was going to say. Some of the others, and one of them was a stutterer too, just waited till I finally got it out and then they'd shake their heads. One store-keeper was so sympathetic I could hardly get out of there fast enough.

The worst time I ever had was when a hotel clerk saw me

persons. Moreover, many individuals have such preconceived notions or attitudes concerning the causes or the unpleasantness of speech handicaps that they react in a more or less stereotyped fashion to such differences, no matter how well adjusted the speech defective himself may be. Finally, as we have pointed out, the speech defective may possess other abilities or personal assets which so overshadow his speech difference that the latter is penalized very little.

In considering the effects of these penalties on the personality, we must remember that penalty need not be overt to produce a reaction. Insecurity, a common term in this clinical field, refers to the fear of penalty rather than to its actual presence, and insecurity alone can warp a personality. Speech defectives often become very suspicious and paranoid. They vividly remember the penalties which were inflicted by a few individuals and imagine that all other people have the same attitudes but are too polite to express them. These imaginary or expected penalties can affect an individual as well as the real ones can.

Generally speaking, the toleration and acceptances of a speech defective provide little problem for the speech correctionist. They indicate good adjustment. And yet occasionally that very acceptance and toleration may foster further problems. The person may refuse to make any new adjustments. He may confine his activities to those situations in which he feels himself secure, even though later in life he will be compelled to meet much more difficult environments. Overprotection on the part of the teacher or parent can have disastrous results. The wise parents and speech correctionists seek to teach adequate reactions to rejection, rather than to prevent the child from ever experiencing it.

Reaction to penalty or approval. We have now considered two of the three major factors contributing to the de-

velopment of the personality—the differences themselves, and the accompanying approvals or penalties. The third factor is the person's reaction to these approvals or penalties. The penalties themselves would have little effect on the speech-defective's personality were he, for example, to ignore them. But his reaction to the penalty is probably the most important of all these factors.

There are three main ways in which a speech defective or any other individual can react to the penalties inflicted by his associates upon his difference: (1) by aggressive or protest behavior, (2) by regressive or withdrawal behavior, or (3) by understanding, unemotional acceptance. These reactions themselves may be considered as differences.

Regressive or withdrawal behavior as a reaction to penalty. When a difference such as that of a speech defect is so conspicuous that a group will not accept its possessor, that person may retreat from further attempts in group activity. He may isolate himself as much as possible from others and lead a sedentary life. He may refuse to attempt to cope with reality, and indulge in daydreaming and fantasy. He may retreat completely from the problem of his difference and develop an interest in other things. These other interests may be developed so highly that he will overcompensate for his weakness. Compensation in a lesser degree does not harm a person. It may develop talents and skills which will add to his personality assets. But if all attention is focused upon the compensation, and the difference is completely disregarded, other serious personality problems will arise. The overcompensation itself may be evaluated as a weakness by the group. Finally, an individual may regress to a former stage of life and revel in his past achievements. He may deny that he has any such difference. He may overemphasize his former acceptances by groups, and dwell in the remembrance of the days when he made satisfactory adjustments and had his parents and

teachers to reinforce his strength if those adjustments failed. All of these mechanisms denote a retreat from reality, a refusal to struggle further with the problem caused by his rejection.

Some speech defectives react in the ways described above. They are especially prone to indulge in such substitute satisfactions as creative writing, music, or reading. They hunt for havens wherein they can avoid the penalties that communication usually provokes. Sometimes the speech clinic itself becomes such a haven. Withdrawal behavior is often fostered by misinformed parents and teachers, but it never solves the speech defective's problem. Indeed, it frequently causes him to avoid the speech correctionist who could help him. Moreover, when the associates of a withdrawing speech defective are constantly confronted by his attitude of avoidance, they respond in the same way, and so reinforce the total maladjustment.

Aggressive or protest behavior as a reaction to penalty. Penalty and rejection by his associates may lead an individual to react aggressively by attack, protest, or some form of rebellion. He may employ the mechanism of projection and blame his parents, teachers, or playmates for his objectionable difference. He may display toward the weaknesses of those in the group the same intolerant attitude which they have manifested toward his own. In this way he not only temporarily minimizes the importance of his own handicap, but enjoys the revenge of recognizing weaknesses in others. He may attempt to shift the blame for rejection. He will say, "They didn't keep me out because I stuttered—they just didn't think I had as nice clothes as the rest of them wore." In this way he will exaggerate the unfairness of the group evaluation and ignore the actual cause. Another attack reaction may be that of focusing all attention upon himself. He can refuse to coöperate with the group in any way, can belittle its importance openly,

and can refuse to consider it in his scheme of existence. Finally, he may react by a direct outward attack. A child, or an adult with an easily provoked temper, may indulge in actual physical conflict with members of the group which has not accepted him. He may spread pointed criticism of the group in a resentful manner. In any of these methods, the object of the rejection does not retreat from reality—he reacts antagonistically and attacks those who made his reality unpleasant.

Among the speech defectives the author has examined, the behavior problems which seemed due to a protest reaction against the group's penalty include: lying, enuresis, constipation, temper tantrums, stealing, arson, suicide, use of obscene language, cruelty to pets, truancy, fighting, destruction of property, disobedience, attempted suicide, sexual promiscuity, and feeding difficulties.

Some speech defectives show few outward signs of these reactions except attitudes of sullenness or noncoöperation; in others, the protest is unmistakable. Unfortunately, these protest reactions do not solve the problem. They merely increase its unpleasantness.

The more the speech defective attacks the group, the more it penalizes him. Often such reactions interfere with treatment, for many of these speech defectives resent any proffered aid. They attack the speech correctionist and sabotage his assignments. The inevitable result of these attack reactions is to push the speech defective even further from normal speech and adequate adjustment.

Intelligent unemotional acceptance as a reaction to penalty. The two reactions previously discussed ignored reality. This third type of reaction involves an admission of reality. A person may honestly state the reason for the group's rejection of him. He may even tell why his difference would be a weakness to that group. There are two kinds of admission. In the first, the individual accepts the

rejection in an emotional and pessimistic manner. He admits the basis for the group action, but regrets it, and accepts the inevitability of future similar defeats. The second method of admission is an unemotional one in which the person realizes the validity of the group's action. He accepts the rejection wholesomely, and takes an objective attitude toward both the group's action and his handicap. The basis of his reactions is the short sentence uttered by the greatest of all mental hygienists, the cartoon character Popeye, who says, "I yam what I yam." The individual with such an attitude says, "Of course I have a difference. I stutter (or have red hair, or weigh two hundred and fifty pounds, or have a big nose), but what of it? That's just the way I am." This type of reaction destroys much of the emotionality and abnormal behavior usually built around a difference. It provides no necessity for using the tricks and subterfuges which always accompany attempts to hide or to minimize a defect. It furnishes the essential basis for subsequent remedial speech work as it brings the defect into the open and allows its possessor to study it thoroughly and to work on overcoming it. No speech defect can be eradicated when it is hidden. It must be seen as a problem to be solved before its possessor can solve it. Johnson³ gives some excellent examples of this reaction in his monograph on the personality of stutterers, and Bryngelson⁴ has discussed the theory of the "objective attitude" in several publications. The student is urged to master these concepts, since they serve as a basis for much speech-correction therapy.

If a speech defective honestly admits his difference, the group will accept it unemotionally. If he states his deter-

³ Johnson, Wendell, "The Influence of Stuttering on the Personality," *University of Iowa Studies in Child Welfare*, 1932, Vol. 5.

⁴ Bryngelson, Bryng, "Psychological Problems in Stuttering," *Mental Hygiene*, 1937, Vol. 21, pages 631-639.

mination to work on his speech problem, the group's support will reinforce that determination. It will criticize and encourage him, realizing that the disappearance of the handicap will ultimately strengthen the power of the group, but refusing to penalize it during the remedial process. It not only will enable the defective to enjoy group association devoid of deceit and its accompanying nervous strain, but also will give him a more normal personality and increase his motivation during the period of speech retraining.

Treatment of persons with personality and behavior problems. Earlier in this chapter, we pointed out that the speech correctionist should attempt to help the speech defective solve his personality or behavior problems, whether they were the cause or the result of his speech defect. Treatment is thereby made much more efficient and effective. In certain instances, the psychiatrist or clinical psychologist must be asked to help. It is even more usual to enlist the aid of parents, teachers, and associates in carrying out the program. Of course, the amount of personality treatment depends upon the nature of the problem.

Clinical psychologists often make the paradoxical statement that the best cure for personality disorders is prevention. It is certainly true that wise parents and teachers can prevent the child from developing sensitivities and inadequate reactions to speech or other differences which society penalizes, and they can foster other differences which will be considered sufficiently attractive social assets to forestall rejection. The speech correctionist should always consider it part of his duty to provide the necessary information and to educate the general public concerning proper parental and pedagogic management of the handicapped individual.

Unfortunately, the majority of the cases seen by the speech correctionist have already developed their personality and behavior problems, and while the occurrence of

new inadequate reactions or the growth of old ones may be prevented, the urgent problem is concerned with the solution of those problems which are causing or contributing to the speech defect or interfering with its treatment. The treatment of these individuals varies with the nature of the problem, with age and intelligence, with the amount of parental coöperation, and with so many other factors that it is difficult to discuss the subject save in general terms.

Certain principles, however, seem to govern the methods which are used. These are: (1) The differences about which the personality problem developed must be discovered, eliminated as far as possible, or recognized (consciously and objectively) as features which good adjustment will minimize and poor adjustment will amplify. (2) The penalties which are being inflicted upon the individual because of his differences should be eliminated as much as possible, and those which occurred earlier in the individual's development should be discovered, brought up to consciousness, and subjected to unemotional analysis or abreaction. Similar procedures should be carried out for those approvals which are not merited or which contribute to the personality problem. (3) The inadequate reactions to penalty or approval must be discovered. Those which are most characteristic should be identified, and a strong attempt should be made to inhibit them. Their contribution to the emotional handicap, to unpleasant social reactions, and to the speech disorder must be clarified. Finally, (4) the objective attitude of intelligent unemotional acceptance of the speech defect and other differences should be substituted for the withdrawal or aggressive reactions.

Discovering and eliminating the nuclei of personality problems. The methods used in discovering what physical, environmental, or behavioral differences served as nuclei for the development of the personality have already been mentioned. A more complete list may be given here. It would

include: thorough case histories, written or verbal autobiographies, personality schedules and tests, conferences and interviews with the case, observation of conduct in various social situations, reports of assignments in social contacts, interviews with relatives or associates, personal association with the case, and such psychiatric techniques as free or controlled association.

There are various ways of eliminating these differences after they have been discovered. If the difference is of a physical nature (cross-eyedness, protruding teeth, obesity, club feet, and so on), we may be able to find surgical, dental, or medical methods for eradicating it. If the difference is environmental or economic, we may be able to eradicate it by enlisting the various social agencies or by removing the child from his present environment. If the difference is behavioral, we may be able to reëducate his parents and associates or to alter his environment so as to remove the irritating stimuli that set off the inadequate behavior. We must always remember that a *difference* implies a relationship, a comparison between two or more individuals, and we may eradicate a difference by having its possessor join a group of individuals who possess similar traits. Thus we often find a swift release from emotional conflict when the speech defective enters a speech clinic and discovers many other individuals with similar peculiarities. His own difference is minimized by such association. When he is able to include himself as a part of normal society by perceiving that its members, too, possess penalizable differences to which they might react inadequately, much progress has been made. For this reason, one technique useful in speech correction is the conduction of a class dealing with personality and behavior problems or a class in public speaking, taught from the mental-hygiene point of view. The speech defectives in these classes soon learn that the so-called normal speakers have their own differ-

ences and insecurities. When carried out under the direction of an able clinician, exhibition and discussion of these differences seems to have much value. Confession and verbalization provide excellent means of reducing their influence, and good-humored admissions or exaggerations tend to diminish the emotion with which they are invested. At any rate, the first task in the management of a personality problem is an attempt to eradicate or minimize those differences about which the individual has built his inadequate behavior. One case study may be cited:

E. G. was a cross-eyed girl of 19 with a very severe stutter. Although of superior intelligence, she left school in the ninth grade and, from that time on, she very seldom left the confines of her home. She dominated her wealthy parents in every way and shirked every type of responsibility. When guests came for dinner, she had the servants serve her in her room. She spoke very little to anyone but read a great deal. Simulated heart attacks were used to control her parents. She refused to see any physician. Financial reverses and the death of her father forced her to do something about her speech defect after an attempt at suicide failed because of lack of courage. Enrolled in the speech clinic, she immersed herself in the literature on stuttering but failed to carry out any assignment which entailed any persistence, courage, or exhibition of her speech defect. Faced with dismissal, she pleaded that she wanted to coöperate but did not have the will power. She declared that she thought she would acquire some if she were permitted to remain. She was told that she could return if she would have an operation for her strabismus and carry out a certain set of assignments at home. The operation was very successful, and, when she returned a year later, her personality seemed to have changed entirely. She had performed not only all of the assignments given her but many more difficult ones as well. She had prepared herself for college entrance examinations, had taken dancing lessons, and had obtained and held a job in a restaurant for some time. For the first time she seemed to have some self-respect and courage to undergo temporary unpleasantness in order to achieve a future goal. Her stuttering was still present though its severity had decreased. She coöperated in every way and progressed rapidly in her speech

work. Her explanation for the change was succinct: "Having my eyes fixed gave me my chance."

Eliminating and minimizing the penalties and unmerited approvals that produce maladjustment. Psychiatrists have often pointed out that the most inadequate behavior shown by maladjusted individuals occurs in those situations in which there are features similar to those of traumatic or extremely unpleasant situations in the early history of the individual. This is especially true of penalties. Even the so-called normal person tends to react childishly at times, and those times are characterized by the presence of people or penalties bearing some important resemblance to childhood conflict situations. These present situations which are reminiscent of old maladjustment are the danger spots for which our speech defective must be prepared, and through our intensive study of the person, we teach our cases to recognize those persons and penalties which bear dangerous resemblance to old conflicts. This very recognition helps to prevent the almost involuntary response which is aroused by such reminiscent conditions. Many adults, as well as children, are not lying when they claim that they "just couldn't help" their inadequate behavior when confronted by old penalties. After the clinician helps them to be on their guard, they can develop the ability to inhibit the sudden overwhelming impulse to withdraw or attack.

Another useful technique in preventing the person or penalty from acting as a cue to set off the old response is to associate with it some other incompatible response, such as one which is humorous or absurd. The clinician may also deliberately create experimental situations, warning the speech defective beforehand, in which the old penalties or unmerited approvals are used. The speech defective is asked to react as adequately as possible and to substitute

an adequate response for that which he commonly uses in such situations. He may also be asked to use similar penalties himself and to see how others react to them. Occasionally, the clinician should set up an experimental situation with the old penalties and give the student permission to react in the old way. With permission, the reaction becomes absurd. Paranoid tendencies may be checked by assignments to exaggerate and burlesque them on a verbal level. A written diary of all suspected penalties as compared with those which are overt will also help.

Above all, it is necessary that all penalties and rejections be verbalized and confessed to someone—the speech correctionist or psychiatrist, as the case may be. Much of the emotion can be dissipated in this way, and the confession will serve as an excellent opportunity for dispassionate analysis and proposals of alternative reactions. Speech is one of the best forms of emotional catharsis we have in our clinical repertoire.

Of course, many of these suggested techniques cannot be used with young children. With them, it is necessary to educate the parents and associates to refrain from using those penalties and rejections which are producing the inadequate behavior. Occasionally this is not possible because of the personality problems or resistances to clinical recommendation which the parents or associates themselves possess. In this event, it is wise to try to take the child out of the old environment, at least for a time. Visits to more coöperative relatives are useful. Occasionally summer camps, private schools, or boarding homes provide such a change. It is also possible to change the environment to some extent by getting the speech defective to join new groups or to make new acquaintances who will react less savagely to the objectionable difference. Even when the parents seem willing to coöperate, it is wise to provide some clinical supervision, since parents find it difficult to change

their ideas and penalties. Family conferences at the end of the day and weekly reports to the clinician in which the parents confess to each other, or to the clinician, their failures in following the new regime will help to insure its success.

Eliminating the withdrawal and attack reactions which characterize the maladjustment. We must remember that eliminating the objectionable differences themselves will not always remove the inadequate behavior shown by the maladjusted speech defective. Withdrawal and attack reactions may become habitual responses to almost any type of insecurity. They may have originally been born and nursed by some former difference which no longer exists. Arising as specific responses to a specific situation, they tend to become generalized and stereotyped. Since they themselves become behavioral differences which are penalized by the group, they attain a permanence which is independent of their original causes. It is necessary, therefore, to focus some therapy directly upon the reactions themselves.

In general, the procedure to be followed is similar to that described in the last section. The withdrawal and attack reactions must be brought up to consciousness, confessed, guarded against, voluntarily practiced in unemotional or clinical situations, exaggerated, associated with humorous and other incongruous attitudes, freed from their satisfactions, penalized, and inhibited. Above all, their motives must be analyzed. They must be understood in terms of the past history of the individual and in terms of their contribution to the personal unpleasantness and social handicap.

It is not sufficient or possible merely to teach the speech defective to give up or inhibit his old withdrawal or attack reactions. He must be taught some substitute response to rejection, penalty, and all the other forms of insecurity. The substitute response usually taught is that which we have described in an earlier part of the chapter as the "objective

attitude," or the intelligent unemotional acceptance of the objectionable difference as a problem capable of some solution. With some cases, it is impossible to teach this objective acceptance immediately, and a clinician will occasionally teach withdrawal reactions to an individual who habitually attacks, or aggressive reactions to the person who characteristically retreats. Even with these cases, the final aim is always the acquisition of an attitude which faces the facts realistically.

The nature of the objective attitude has already been discussed. Intelligent and well-informed parents teach it to their handicapped children when they are very young, and these children find it just as natural as other children find withdrawing or attacking. Among children as well as adults, the objective attitude is most easily taught through example. Attitudes are notoriously contagious, and if some of a child's associates, parents, or teachers adopt such an objective attitude, he will usually acquire it almost unconsciously. Occasionally, it will be necessary for him to be taught some verbalization of it, so that its expression will not be too hesitant or floundering when challenged by his associates. When possible, the child should be taught to accompany his unemotional admission of the difference with a statement of belief in its eventual disappearance. Thus one untutored cross-eyed child was overheard saying to his teasing associates, "Sure I'm cross-eyed and I'm going to Chicago sometime and get it fixed." All teasing stopped. A difference about which the possessor was not sensitive was not worth wasting teasing upon—so reasoned the group. A well-conducted speech-correction class in which groups of children are taught together is a very efficient agent in the teaching of this attitude. They learn it from each other as well as from the teacher.

When working with older children or adults whose maladjustment is very marked, it is necessary to use the same

indirect methods for teaching the objective attitude, but, in addition, more direct methods can be employed. The philosophy behind the objective attitude should be taught with emphasis on its reasonableness. The speech defective, for example, should be shown, through analysis of actual situations, how his withdrawal or attack reactions contribute to the present unpleasantness and perpetuation of his handicap. He should be shown that the speech defect is but a small part of his total handicap, that an emotional handicap is usually added to every physical or behavioral one, and that often the former far overshadows the latter.

The student should be required to outline a program of self-reëducation under the guidance of his clinician. Daily assignments should be formulated, first by the clinician and later by the student himself. These should be constructed in such a fashion that the student will have to enter new situations in which his difference is subject to penalty. They should provide devices for checking the occurrence of old reactions. Daily reports should be made to the clinician in written or verbal form. The student should make a confession of each day's inadequate reactions, adding an honest analysis of reasons for his failure and a statement of the more adequate reactions which he might have used. Whenever possible, the teacher and student should formulate assignments to cancel the failure. Occasionally, some associate of the student who consistently uses the same penalty can be found. Such associates provide excellent opportunities for demonstrating improvement in adjustment.

A system of good-natured but vivid penalties should be devised to take care of those failures which cannot be canceled. The student is assigned to use the inadequate reactions in situations in which he is not insecure. For example, a girl with a falsetto voice due to hypertension resulting from social and economic insecurities constantly reacted to all persons whose social poise she envied by sar-

castically attacking them. With those to whom she felt socially superior, she never showed this reaction, and her voice was not falsetto. She was therefore assigned to be devastatingly sarcastic to three of the latter individuals. The assignment was very difficult, but, when finally performed, it so convinced her of the inadequacy of the sarcasm that she seldom used it again, and, when she did, the memory of its distastefulness soon curtailed its use. The value of such negative practice is that of increased insight. The student is assigned deliberately to create situations in which the former insecurities and inadequate behavior would tend to be present. The old inadequate reactions, however, are not to be used, but, instead, the appropriate behavior is to be carried out. Such deliberate entrance into insecure situations not only teaches new reactions, but also gets rid of a great deal of the fear associated with them. The student is required to state his problem and his attempts at solution whenever opportunity presents itself. Admission of the problem and evidence of intention to improve will often change the attitudes of groups which formerly rejected the individual. Often the speech correctionist can contact the persons who have previously exerted these penalties, informing them of the situation and requesting their coöperation. A systematic program of self-improvement should be worked out to provide the maximum future economic, social, and sexual security. Subgoals for each of these securities should be formulated, and assignments leading to their fulfillment should be systematically carried out. Most of this personality work is individual and very time-consuming, but it is truly effective.

Treatment of individuals with certain special personality and behavior problems. Whenever faced by penalty or the threat of penalty, certain speech defectives with a history of thoroughgoing withdrawal fail to coöperate with the speech correctionist despite their urgent need for help.

They often claim that they would like to coöperate but that either (1) they do not have the energy or will power to carry out the assignments, or (2) they do not have the time because of the great demands made upon them by their music or writing or other form of overcompensation. These two defenses are rather difficult to break down, but the task can be accomplished. Occasionally it is advisable to let the overcompensating individuals start their speech-correction work and then to terminate it suddenly because of their refusal to coöperate. They can then be readmitted whenever they agree to give up the overcompensation. Strong realistic attitudes on the part of the clinician, together with examples and powerful propaganda in behalf of the objective attitude, will usually solve the problem.

Teachers of speech correction often fail to make much headway with speech defectives of the weak-willed variety, and they attribute their failure to this characteristic itself. Although such students are exasperating in their seeming refusal to put forth any real effort of their own toward alleviating their handicaps, it will be found that proper training in self-discipline will produce excellent results. However, before the teacher can hope to train another person in such discipline, it is necessary that she train herself, a process which will usually be of more than academic value.

Before one begins such training in self-discipline, it is necessary to make a behavior analysis to determine wherein the weakness lies. Such an analysis would require examples of behavior which indicate: (1) inability to make a prompt decision; (2) avoidance of responsibility or opportunity; (3) procrastination of inevitable tasks; (4) leaving tasks or projects unfinished; (5) refusal to undergo temporary unpleasantness for a future good; (6) disorganized and wasteful effort; (7) half-hearted effort, obviously inadequate to the task; (8) inability to perceive or respond to a subgoal

leading to fulfillment of a strong desire; (9) self-deprecation; (10) daydreaming and other substitute satisfactions. The relative frequency of behavior falling under these categories will indicate the proper direction of training in self-discipline.

The majority of individuals will have little difficulty in carrying out a program of remedial work based upon these weaknesses once they are clearly seen, for there is a formula which almost forces them to carry out their projects. That formula may be stated as follows: (1) state your task and your determination to someone whose respect you greatly desire or wish to keep; (2) plan a definite time and place for its accomplishment and tell that other person what they are; (3) insist that he check up on your performance as soon as possible.

It should be stressed that the motivation for these assignments or tasks should be the fulfillment of a desire to improve oneself rather than the consequences of the task itself. When working with a very weak-willed speech defective, it is at first necessary to subordinate his will entirely to your own, to compel him to carry out the tasks which you assign, and to make the reports you demand. But it is wise to wean him psychologically as soon as the effect of the new regime has built up his own self-respect. At first the assignments should be so constructed that their unpleasantness will never be greater than the unpleasantness of reporting a failure. As he continues to fulfill them, his pride in himself will increase, and consequently his desire for approval. As this grows, so, too, can the difficulty of the assignments. The assignments and tasks should always be appropriate to the patient's weakness, but they may range far and wide within the category. Thus a speech defective who habitually refuses to undergo temporary unpleasantness for a future good is assigned to have a dental cavity filled. Self-discipline assignments need not be con-

fined to speech work. Occasionally when the patient makes an absolute refusal to carry out a speech assignment, it is well to perform it yourself, insisting that he accompany you. As you carry it out, verbalize the thoughts he would have, were he doing it, and exaggerate his symptoms. However, no refusal must go unchallenged, and it is better to give up a case than to continue without his coöperation.

As soon as possible, the speech defective should be acquainted with the entire plan of his treatment so that he can see the relation of his daily assignments to his subgoals, and their relation to the end goal—normal speech. Too many teachers ignore the importance of this type of motivation, not realizing how much they are retarding the patient's progress. Blind work is usually worthless. Insofar as possible, it is well to make speech improvement merely a phase of general improvement. Improvement in the patient's personality will improve his speech, and vice versa. The speech-correction teacher should train herself in outlining such general campaigns for self-improvement by outlining one for herself.

When the speech defective is characterized by aggressive and attack behavior, the speech correctionist must expect to find these attitudes focused on him by that defective. Hidden or open antagonism to speech-correction work will occur, sometimes expressing itself in subtle sabotage and sometimes in direct conflict. An excellent discussion of such specific behavior problems as lying, stealing, sex offenses, and so forth, will be found in the references by Louttit and Kanner. The author has found it wise to provide some form of outlet for the impulse to attack or rebel in these cases. Some associate is delegated to provoke the antagonistic reactions at every turn, keeping a detailed report of the case's behavior. Other associates are designated as individuals to whom the case must present a picture of modesty, submissiveness, and withdrawal. All

expressions of antagonism or justification should be recorded, and the student should be required to recite them over and over until they lose their satisfaction. Exaggerated behavior of this type should be assigned to be displayed in nonappropriate situations.

The clinician should never allow himself to react to the antagonism shown him, but must always show an attitude of tolerant interest in that behavior. He may duplicate the student's behavior in some other situation, requiring the student to observe the mechanisms demonstrated. In a few cases, the negativism and antagonism can be used as actual motivation for speech work if the clinician expresses his belief in the student's inability to achieve certain goals or perform certain tasks. If the environment of such an individual is altered so that it provides a minimum of penalties or empathic reactions to his attack, and if other methods of reaction are taught to him, he can usually be brought to make an adequate adjustment.

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6

The Speech Correctionist and General Procedures in Treatment

This chapter is designed to deal with the nature of speech-correction work and the demands it makes upon those who do it, be they parents, classroom teachers, speech-correction teachers, or members of a speech-clinic staff. Speech correction is reëducation, not merely removal of the defect.

Qualifications of the professional speech correctionist. As the last chapter pointed out, not only is personality built about differences in speech, but also profound emotional reaction-patterns are often associated with these differences. Then, too, reëducation frequently demands much of a child in the way of courage, persistence, and applied intelligence. All of these characteristics of the speech-correction situation make certain demands upon the speech correctionist in terms of professional attitudes, academic preparation, personal qualifications, and skill in handling other people.

Speech correction, if it has not as yet attained a professional status, is so steadily achieving one that it behooves all workers in the field to conduct themselves according to a strict code of ethics, to join the American Speech Correction Association, and to keep abreast of the research which is contributing greatly to our knowledge of causes and techniques. The speech correctionist must recognize the delimitation of his field from that of the physician, the psychiatrist, and the orthodontist. He must be prepared to

prove his worthiness of their respect, and to seek their services whenever necessary.

Principles of professional conduct. Certain principles of professional conduct should be stated. They are: (1) Treat each case as a unique individual, seeking every possible opportunity to increase your knowledge and understanding of him as a person. (2) Refuse to respond emotionally to the speech defective's behavior. Treatment must always be intelligent and purposive. (3) All confidential information must be respected and guarded carefully. The patient must have perfect confidence in the speech-correctionist's intellectual honesty. (4) Draw the line against undue familiarity. Avoid physical contact with the patient. Do not confide in him. Do not show surprise, disapproval, mirth, or annoyance unless you use the expressions for a definite clinical purpose. Refuse to engage in argument or controversy. Conduct yourself so as to increase his respect. (5) Do not practice under false pretenses. Posing always contributes to one's insecurity, and in the intimate relationship which exists in speech correction, poses will soon be detected. (6) Plan your conferences and remedial work. No patient must be permitted to know discouragement because of the teacher's refusal to do her part. If the teacher accepts a case, she accepts the responsibility for doing her utmost. If she contents herself with anything less than her best, she had better do something else. Human handicaps are not to be played with. (7) Maintain a consistent program of self-improvement. (8) No promises or guarantees of probable results should be given to the patient or to anyone else. (9) Accept only justifiable remuneration and avoid any taint of exploitation. (10) Treat other workers in the field with respect.

Preparation of speech correctionist. The academic preparation needed by the professional speech-correction teacher is wide and varied. Of the sciences, biology, physiology,

objective attitude toward their own insecurities, calmness, the ability to recognize subterfuge and mental mechanisms, and self-respect. Few people, of course, are born so virtuous as the above list of traits might imply, but speech correction puts such a premium upon such characteristics that those who do not possess them acquire them as soon as possible. All speech-correction teachers should make a systematic attempt to improve themselves in all of these directions.

Implied in many of the above traits is a skill which is so important that it merits special discussion—the ability to influence, motivate, understand, and control other people. All of us possess some of this ability, but there are few who could not profit from a course of self-training specifically designed to increase it. Such a course would include training in: (1) seeing the other person's point of view; (2) personal adjustment with recognition of one's own mental mechanisms and inadequate reaction-patterns; (3) self-discipline; (4) carrying out a long-range program of self-improvement; (5) the study and prediction of human behavior; and (6) controlled experimentation in the field of human relations.

While it is manifestly impossible to give in detail the content of such a course of training without fitting it to the needs of some specific individual, some illustrative assignments may be helpful to a student preparing himself in speech correction.

The beginner in the field of speech correction should make an effort to experience the speech defective's handicap. He should assume a severe stutter, or a lisp, or cleft palate speech, and enter a few common speech situations. He should stop people on the street and inquire as to the location of certain buildings, using pronounced symptoms of the various speech disorders, and noting his own reactions and those of the people to whom he speaks. He should make an

attempt to adopt the objective attitude, remaining calm and intelligent in the face of bad audience reactions. He should attempt to make the audience feel more at ease by commenting on his handicap and explaining that he is attempting to get rid of it.

Besides the above methods, he can understand the speech defectives' points of view by reading their autobiographies, by associating with them socially, and by writing descriptions (from the speech defectives' points of view) of situations which are perfectly normal to him. The student preparing himself to do speech correction can train himself in the recognition of his own inadequate reactions to insecurity by holding truth-sessions with his fellow students, in which each member presents the picture of his own personality assets and liabilities, then leaves the room while the other members discuss him, returning to be presented with the composite picture as provided by the discussion. He then verbally accepts or rejects the criticisms and the group coöperates in outlining a campaign of improvement. It is also well to have the student give a verbal and thorough autobiography before some similar congenial group. A month's diary of inadequate behavior reactions or situations in which the student was insecure is effective. Each student should finally present a paper or lecture on the various mental mechanisms, with illustrations of each from his own or his associates' behavior.

During the student's apprenticeship in the training clinic, he should avail himself of every opportunity for the study and prediction of human behavior. All should be grist that comes to his mill. He should train himself in observation and appreciation of the little human dramas which roll up their curtains in the most unexpected places. Not only should he make intensive and systematic studies of a few of his acquaintances, writing down his findings in a notebook with examples of accurate and inaccurate predictions of

their behavior, but he should also cultivate the acquaintance of strangers. All of this should be carried out with a thorough appreciation of the amount of error involved, with humorous self-appraisal, and without ostentation. At times it is possible to set up little experiments in human behavior in order to control conditions for more accurate prediction, though discretion must always be used. Students should improve themselves in their understanding of human nature, and that may be studied as well as any other subject.

Speech correction in the public schools. Speech-correction work is carried out in most schools by the special speech-correction teacher, the elementary classroom teacher, the high-school teacher of speech or English, or an unusually interested principal or superintendent. Without training, many of the latter individuals make woeful mistakes and soon become discouraged. With some training or supervision, however, they do a great deal to eliminate and prevent speech handicaps. The same things may be said about parental speech correction.

The most efficient work is done by the special speech-correction teacher. Her training and freedom from other activities permit this efficiency. When she first enters a school system which has not previously had speech-correction service, she should be given several months to survey the various schools and to examine the children who are in need of the help she can give.

Many school systems prefer to have the classroom teachers select the cases with whom the speech-correction teacher is to work. This method is usually not advisable because many classroom teachers are unable to detect the child who skillfully hides his stuttering or pretends to be ignorant rather than attempt to recite. Again, many teachers resent any interruption to their daily schedule, and they either believe the fallacy that all children outgrow their disorder or they minimize its importance. The speech-

correction teacher can usually make her survey of a class in the space of an hour and select the cases who should work with her. The classroom teacher should be notified in advance by the principal that the survey is to be carried out so that misunderstanding will not wreck all chance for coöperation. In making this survey, the speech-correction teacher should examine each child individually. A standard brief articulation test, which includes reading, naming, and propositional speech, should be used. If the school system is so large that this survey would be an all-year task, the teacher should concentrate on three or four schools and confine her activities to them.

After this preliminary survey has been completed, the speech-correction teacher should reëxamine the cases found. This second examination should be much more detailed and complete and should follow the type of examination sketched in Chapter VII. Home calls should be made or the parents should be invited to come to the speech-correction office so that additional information concerning the causes, home conditions, and coöperation may be procured.

It is unwise for the special speech-correction teacher to carry a load of more than one hundred cases. Even this number will necessitate seeing approximately ten cases each hour, since each child should be seen at least twice a week for a speech-correction period of approximately fifteen minutes. Increasing this load merely discourages the teacher, causes her work to become perfunctory, and insures almost certain failure in a large percentage of her cases.

Selection of cases. It is often difficult to keep the case load within the limit which has been recommended, but every effort should be made to do so. This involves selection. Interviews with many speech-correction teachers bring out the principles which they follow in order to make this selection most effective. They declare that when selection must be carried out, the first to go are those children

with very minor defects—those, for example, who use the vulgar *t* and *d* substitutions for the *th* sounds. Where only one or two sounds are defective and the child can make them correctly when he watches himself, the speech correctionist usually gives some information concerning treatment to the classroom teacher and to the child's parents and lets the child go.

If there still remain many more than the hundred with whom she must work, the speech correctionist eliminates those who have pronounced organic defects, such as adenoids in a case of denasal speech or a very malformed jaw in a child who lisps. These disorders can be corrected by surgical or by orthodontal treatment, and although much can be done by the speech correctionist to teach compensatory movements, the work demands much more time and care than she can afford. Exceptions to this principle, of course, will always exist. Generally speaking, the teacher should select those cases who are most likely to profit from her help.

The speech correctionist likewise tries to eliminate those children who have such low intelligence as to make the short periods of treatment relatively useless. School administrators often oppose this, pointing out that the feeble-minded child needs the tool of speech even more than does the normal child; but even though this attitude be accepted, it seems inadvisable to do speech correction with such children unless it can be done thoroughly enough to insure success. Much more time is needed for them, and the problem should really be handled by the opportunity-room teacher who has had training in speech correction.

If many children in excess of the proper case load still remain, the speech correctionist should confine her efforts to the grades above the kindergarten, since many of the children in the preschool years have not matured sufficiently to acquire certain of the speech sounds. Speech-improve-

ment work should be carried out at these lower levels, but it can be done by the kindergarten teacher.

If still more selection is necessary, the teacher should choose from this group those who show great need and at the same time exhibit good possibilities of improvement. Pronounced emotional conflicts may be referred to the school psychologist or psychiatrist. In any event, the speech correctionist should not wreck her chances of success by taking an immense load of cases. Proper selection according to logical principles will solve this problem.

Organization of speech correction in the public schools. Having selected her cases, the speech-correction teacher's next task is to arrange her appointments. Since there are several sources of difficulty inherent in getting a schedule which interferes as little as possible with the classroom teacher's work, the following suggestions are offered. Classify the cases according to school, grade, type of defect, and probable teaching difficulty. Get the daily schedules of each classroom teacher. Confer with the classroom teacher to determine which periods she would prefer to have her speech-defective children miss. Be sure to avoid the nap, recess, milk-feeding, and writing periods. Do not schedule the period so that the child misses the activity in which he is most deficient. Try to schedule the youngest children for the early morning hours. When several children must come from the same room, try to arrange the scheduling so that they will miss consecutive periods and the disturbance will be minimized.

Although certain children must be taught individually, necessity will demand that approximately ten children must be met each teaching hour if each child is to be seen twice a week. Groups should seldom exceed five children, and in most school systems they average about three. The period should seldom be less than fifteen minutes in duration. The size of the group should vary according to the defects in-

cluded, and in general it is wise not to use stutterers and articulatory cases in the same group. A larger number of articulatory cases can be handled in a single group than can those of any other type of defect. The younger the children, the larger the group may be. Approximately one fourth of all cases necessitate individual conferences.

Through the principal's office, the classroom teacher can be made to accept the responsibility for sending the child to the speech correctionist at the proper time. Often she writes the child's name and the appointment hour in one corner of the blackboard and insists that the child assume the duty of remembering. When the speech-correction teacher cannot keep her appointments, she usually notifies the principal's office so that the children will not wander aimlessly about the building.

Some school systems feel that the speech-correction work should be carried out in a central place, usually the special building which houses the spastic, deaf, and mentally handicapped children. The school busses bring the children to the speech-correction rooms, but this involves much waiting and waste of time. Another more important objection to such centralization is that, since the speech defective needs little special apparatus for retraining, the work can be done in the child's own school building, thus preventing him from feeling any more peculiar than necessary. Speech correction thereby becomes a subject similar to remedial reading or writing and carries few social penalties. The first aid, nurse's room, library annex, principal's office, or any unused corner which is relatively quiet and free from interruption commonly serves as an adequate place. The speech-correction teacher frequently carries a bag or two of toys, books, and other teaching materials. A special room for speech correction would be preferable, of course, but the service does not need to wait for such space.

Experienced speech-correction teachers often find that

one-half day each week should be set aside for office work, home calls, and interviews with classroom teachers. A position of this sort in the public schools entails a great deal of such extra work and is usually considered by any administrator to justify this free period. A series of mimeographed bulletins concerning the nature, causes, and treatment of the various speech defects should be sent out to the parents and teachers. Many speech-correction teachers find that an excellent way of getting classroom-teacher coöperation is to prepare a general outline of the speech-correction program for each child. Copies of this are sent to the parent, principal, and the classroom teacher, and as each major achievement has been attained or a subgoal reached, the classroom teacher is notified. This often results in an independent checking of the child's success in the classroom with a subsequent coöperation which otherwise might not have been forthcoming. Whenever a child fails to keep an appointment due to illness or some other reason, the speech correctionist may use the opportunity to visit the classroom or to make some sort of written contact with the parent, thus showing her interest in the child. The speech-correction teacher should keep abreast of the major projects going on in the classroom and use the latter to motivate or vary the corrective exercises and at the same time to help the child contribute to the regular classroom work. After the proper rapport has been gained with the classroom teacher, the speech correctionist may occasionally offer to teach some subject such as reading or arithmetic, demonstrating how speech-correction work can be worked into the regular procedure without difficulty. Although many antagonistic and uncoöperative attitudes on the part of classroom teachers are often experienced when speech correction is first begun, they soon disappear if the speech-correction teacher shows an interest in the child and a profound respect for her teaching associates. If she appreciates the power

the classroom teacher has to insure or negate her success, she will leave nothing undone in perfecting this relationship. As soon as the work is well initiated, the speech correctionist should invite the principal or classroom teacher to visit one of the speech-correction periods. The speech defective needs to practice his new skills under somewhat emotional conditions in order to insure complete success, and so no concern need be felt for his part. Parents may also be encouraged to make these visits, which produce a respect and coöperation which can be achieved in no other way. Needless to say, they also improve the speech-correction work.

Teachers of speech correction should also consider it a part of their duty to educate the general public as well as the school administration concerning their field. They will be called upon frequently to address parent-teacher meetings, and they should use these opportunities to dispel some of the vast ignorance concerning the causes and treatment of the various speech disorders.

Speech correction and the classroom teacher. Speech-correction teachers often inquire as to the amount of coöperation which they can expect from the classroom teacher or parent. The answer is, of course, that they can *expect* real coöperation from very few teachers or parents. Some of the younger teachers, still vibrant with enthusiasm, and some of the older teachers, who have lost their early zest and wish to recapture it, will appreciate a new opportunity to help their students. And there are the real teachers who constantly seek to improve themselves in the knowledge and skills necessary to their profession. Nevertheless, many classroom teachers do not welcome any new opportunity to help their students. As one of them said, "We've got too much opportunity now. We have almost more than we can stand. We have too many students and too little time. Indeed, we are fortunate when we can do what we should to

take care of our children as a group." Any unbiased observer will recognize that this objection has evidence to support it. However, if the speech-correction teacher is resourceful and tactful, she can usually convince the large majority of classroom teachers that the child with a speech defect can be helped in his regular subjects without adding appreciably to the teacher's burden.

The speech-correction teacher should be as definite as possible in her suggestions. Thus one speech-correction teacher who had been offered coöperation by the classroom teacher made the following suggestions:

In your store project, perhaps you can arrange to have Jimmy be the storekeeper. I have taught him how to say the words "six," "seven," and "cents" without lisping, but he often forgets. Perhaps if you will tell him that he must say those three words correctly or lose his turn behind the counter, it will help.

When you have your "telling" period, will you ask Sarah to tell about how we played radio this morning? She is supposed to say "wadio" the first time and then wink at you. After that she should use it correctly.

I understand you are teaching some phonics now. Perhaps Bob can be given a chance to show a little superiority for a change by telling the other children about the *f* and *v* sounds. I will prepare him for this recitation, if you are interested.

Would you mind letting Jimmy and Mary tell their story together tomorrow morning? They have been practicing. I suppose it's really a little play. Concerns the making of soup. It can probably fit into the story period without causing any bother.

John can name and find on the map and tell several things about several strange places that begin with the *k* sound. Some day in Geography when you find a convenient moment, he can interest the class for several minutes. Although this is the sound he fears most, I think he can handle the words without losing his control.

It will be obvious from these examples that remedial speech work can really contribute to the interest of classroom activities and that the range of application is very wide. Classwork is primarily useful in making the new speech habits permanent, in recognizing and canceling errors, and in preventing maladjustment. When no speech-correction teacher is available and the classroom teacher must do all the remedial work, she should devote short five- or ten-minute periods during the recess or after school hours to the intensive and individual therapy needed in the beginning stages of treatment. After the child has been taught his new sound, or a method for handling his stuttering, or a new way of phonating, the classroom may be used as a reinforcing agent.

Speech correction in the home. Many of the same observations hold for parental coöperation. The parents can seldom be used in the beginning steps of treatment. They tend to be too hasty even when they know what to do. The history of past failure in speech teaching tends to handicap them, and too many attitudes inappropriate to the remedial situation are aroused by the parent-child relationship. There are, of course, many parents to whom the above strictures do not apply, and some of them have done excellent remedial speech work, but unfortunately they are in the minority.

Again, when it is necessary that the parent do all the remedial work, it is wise to insist that the preliminary work be done in a special room, such as a bedroom or guest room. This will tend to identify the speech work as demanding different attitudes from those which ordinarily exist between parent and child. Speech periods should be short, well planned, and motivated. Having two ten-minute speech periods each day, always occurring at the same hours, will facilitate the work. If the parent possesses personality traits which tend to interfere with effective teaching, she

should do her utmost to discard them the moment she enters the speech room. If she shows a new personality to the child, the latter will usually adjust to it and much advantage will be gained.

In the majority of cases, it is advisable to have some person other than the parent do the remedial work. If no speech correctionist is available for this purpose, a careful and detailed program of treatment should be outlined by some specialist in the field, and a good teacher persuaded or hired to do the work under his supervision. Frequent reports are necessary if this admittedly makeshift arrangement is the only one possible.

When a teacher trained in speech correction is engaged in the remedial activities, the parents must not delegate all the responsibility to her. Much home coöperation is needed if the treatment is to be efficient. This coöperation can be gained in several ways. Conferences between parents and the speech-correction teacher can clarify the lengthy program usually necessary. Special techniques can be explained, the subgoals outlined, and the amount of expected progress can be estimated. Such conferences also permit the teacher to supervise the homework. Beside these conferences, the teacher should send daily assignments home to the parent. These should be very short, easily understood, and easily carried out. Some actual examples of these assignments follow:

Robert has learned how to do the talking-and-writing technique of which I spoke at our last conference. However, he occasionally says a "th" when writing the "s" symbol. Would you mind helping him as he writes a page of this talking and writing? I'd like to have you encircle every "s" that he mispronounces, and stimulate him with five good clear "s" sounds, before he continues.

Will you please tie this picture of a child making the "f" sound to the door between the kitchen and the dining room, and remind Mary to make the sound every time she goes through?

Will you call one of the chairs in the house the "Make-no-face Chair" and see to it that, whenever your son sits in it and stutters with that facial contortion I pointed out to you in our last conference, he gets up immediately and walks around it, saying "Make no face, make no face, make no face"? If he stutters without the facial contortion, he should be praised even more than if he has no blocks at all, for you remember that at this stage of the treatment we are most interested in getting rid of that one bad symptom. Free speech can come later. And please see to it that he does some speaking from this chair at least three times tomorrow. I would appreciate a note from you describing what happens.

While most intelligent parents welcome these assignments and provide the best of coöperation, it is obvious that other parents could not and would not carry them out. In the latter instance, the problem must be solved at school, using such resources as are available.

Group versus individual techniques. Although from a consideration of the amount of attention and time to be given it is better to work with the child individually, nevertheless there are certain advantages to group work which should not be overlooked. The latter provides more natural-speech situations; some children are strongly motivated by competition; and speech games are more attractive when carried on in a group.

Since the children within any one group usually possess similar defects, seldom number more than three or four, and fall within a narrow age-range, it is possible to employ any of the techniques used in speech correction successfully. When the teacher must give individual attention to any member of the group, she calls the child to her side, and the other members act as an audience, as critics, or carry on some type of seat work.

Some of the more common types of group activities are: listening to the teacher's stories and acting the parts she describes; relaxing; manipulating the speech organs or re-

citing in unison; echo games; word pointing; identifying categories; imitation activities; guessing games; completion exercises; rhyming; picture naming or describing; answering simple riddles; selection of appropriate sounds or word from a group of words; and matching activities. There are many others which any competent teacher will be able to invent. Whenever possible, these activities should be linked to the temporary interests and to the projects being carried out in the classroom of the child. Thus, each of the various holidays may be made the theme of the speech-correction project, and the activity characteristic of each season can be modified to provide a motivated vehicle for speech work.

Some children do not respond to group work and progress much more rapidly when treated individually. With these children, the teacher should seek to effect a strong transference, getting the child to desire her approval more than anything else. Self-competition which will foster very rapid progress can be created on this basis. The teacher should study the child as thoroughly as possible and should adapt her techniques to his interests. When working with older children or adult speech defectives, the speech-assignment method is commonly employed. Since the speech correctionist can seldom spare more than half an hour each day for individual work with any one case, the conference is usually devoted to: (1) the student's report of his experience in carrying out the previous day's assignments; (2) a discussion and analysis of any difficulty that occurred, with suggestions for alternative methods or means of cancelling the failures; (3) some supervised retraining; and (4) the formulation and explanation of the next day's assignments.

The criteria of a good assignment follow: (1) it is directed specifically toward the attainment of a goal which the speech defective understands; (2) it can be performed economically as regards time and effort; (3) it demands no more than the student can be expected to do; (4) it is not

vague or general but direct, detailed, and clear; (5) it should permit some objective report. These individual assignments may employ some older friend, parent, or teacher to supervise or assist the child in fulfilling them. Usually the more difficult cases demand this individual type of treatment, but most teachers find it advisable to alternate some group activity with it.

Differences in the treatment of children and adults. In a preceding chapter the speech defective was discussed from the point of view of his developing personality. In later chapters concerning the methods for treating each of the major types of speech defects, modifications of those methods as they pertain to children or adults will be described. Nevertheless, the student must be reminded that this text is primarily designed to sketch the principles and basic methods of speech correction and not their specific application. It is doubtful whether any text could possibly hope to describe the great variation of techniques needed in actual remedial work. Each individual must be treated according to his own peculiar characteristics. The submissive or aggressive, the younger or older, the dull or the bright child—each demands his own modifications. With these reservations in mind, it seems advisable to give some general principles in applying the methods of speech correction to children in the age range from four to ten years.

The teacher must provide the motivation in the majority of such cases. Deferred rewards are seldom effective. Concrete symbols of achievement must be used whenever possible, and the teacher must not be too critical. Often the children must be praised for an attempt even though the result is far from satisfactory, for the teacher's praise can become a very important reward and motivation. The teacher should praise success and ignore failure, unless the latter is relatively rare. Whenever too much failure is occurring, vary the activity so that success occurs. Use

social approval such as can be gained from other children in the group, from the classmates or regular teacher, or from the parents.

Children can seldom be expected to react to subgoals unless the latter are made ends in themselves. Abstractions of any kind should be avoided. The child needs more help and direction and less logic. Many times any reason seems to be acceptable to him, providing it is simple enough to be understood. Children often seem unable to retain or recall the things taught them from one speech period to another. If the original impression was sufficiently vivid, this failure does not occur. If the teacher prepares the child for the recall by recounting the activities of the preceding period or by giving a short review of them, the child is usually successful.

One very successful public-school teacher of speech correction writes as follows:

I always try to create the attitude that when the child comes to speech class, he comes to work, even though most of our activities approximate play. We always speak of doing speech work. Some of my fellow teachers do everything through games, but I believe I get better results my way.

The way I feel or act makes all the difference with little children. If I'm interested, happy, and enthusiastic, I can get them to do anything. Their enthusiasm can easily be worked up. I always try to watch their mood when they first come in, and either fit my activity to that, or else try to modify it. I never make any detailed lesson plans ahead of time. They never work, and some of my best methods have been invented on the spur of the moment. It's fatal to become stereotyped in your speech-correction work. Children sense it immediately. Although it is some trouble, I always make and keep individual notebooks for each child. In this we collect our new sounds and words and record our achievements. This creates self-competition of the best type. On the star page, they often ask me what each star was for, and this certainly seems to motivate them.

I find that I must watch fatigue and shift of attention closely. If I can prevent them during the first two weeks, I never have any further trouble with motivation. The children seldom need to know the reason for any activity; they merely need to share it.

I don't believe that we break old habits in young children. We always build new ones which displace the others. Thus I seldom use penalties of any kind or call attention to errors. Praise and social rewards for success seem more important.

Although I often can find wonderful rationalizations, I know deep in my heart that, whenever I have failed with a young child in getting rid of his defect, it is my fault, not his.

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An outline of the courses offered at Milwaukee State Teacher's College for the correction of speech defects in the prospective teachers attending that college, and for the training of those students in the actual handling of speech-defective students in their future elementary-school teaching.

2. Clark, K., Stoddard, C., Henderson, E., McDowell, E., and Mueller, H., "Speech Problems in the Schoolroom," *Proceedings American Speech Correction Association*, 1938, Vol. 8, pages 90-95.

A round-table discussion of the various speech problems to be found in the schoolroom, the facilities found in different parts of the country for aiding the speech defective, and suggested background for a teacher of speech.

3. Fishel, M. V., "What the Elementary Teachers Can and Cannot Do in Speech Correction," *Proceedings American Speech Correction Association*, 1936, Vol. 6, pages 89-94.

A collection of brief case studies of speech-defective cases in the Janesville, Wisconsin, school who were aided by elementary teachers after the correct diagnosis had been made by a speech teacher and the therapy had been suggested by her. These teachers were, in general, those who had had some voice or speech training, those with exceptional personalities, and those who coöperated with the special teacher in working on some of the more simple speech defects. A plea is made for more adequate teacher training in speech.

4. Mase, D. J., "A Speech Corrective Program for the Teachers College," *Quarterly Journal of Speech*, December, 1936, pages 618-626.

A suggested program for speech correction in teachers colleges, developed from a three-fold purpose: first, that the speech of each teacher receiving a degree meets a certain standard; second, that the teachers up to the senior high level and the high-school English teachers receive education in the treatment of minor speech defects; and third, that the colleges provide a center where the teachers may get additional help and service when they wish it. Each of these points is developed in detail.

5. Mulgrave, D. I., *Speech for the Classroom Teacher*, pages 353-358, New York, Prentice-Hall, 1937.

The part which the classroom teacher may play in speech correction is discussed—her attitude, her coöperation with the special speech-correction teacher, and some general considerations and suggestions regarding remedial measures.

6. Raubicheck, L., "The Speech Training Laboratory, An Abstract," *Proceedings, American Speech Correction Association*, 1936, Vol. 6, pages 127-129.

This brief article gives the advantages of laboratory practice in speech and voice problems, the types of groups handled there, and the four parts of each clinical period which the teacher has supervised.

7. Routh, R., "Remedial Speech Work in the Indiana State Teachers College Laboratory School," *Teachers College Journal*, March, 1937, Vol. 8, No. 4, pages 33-40.

A description of a speech-correction project in a demonstration school. Individual diagnosis, methods, and results of treatment are discussed.

8. Stoddard, C. B., "How the Elementary Teachers Can Coöperate with the Speech Correction Staff," *Proceedings, American Speech Correction Association*, 1936, Vol. 6, pages 75-82.

The author tells what the classroom teacher should know about the various speech disorders. She makes a plea for the speech-defective child, asking for consideration, common-sense treatment, and the creation of a school environment free from teasing and undue penalty or disturbance.

9. West, R., Kennedy, L., and Carr, A., *The Rehabilitation of Speech*, pages 190-192, New York, Harpers, 1937.

A list of the desirable personality traits which the speech correctionist should possess. A code of professional ethics is described.

The Case History

In preceding chapters, we have emphasized the importance of a thorough study of each individual speech defective; in those which follow, we shall outline examination methods which provide for a systematic exploration of factors causing or contributing to the speech defect.

Uses and limitations of the case history. The first of these examinations is the case history. Although it is incomplete, unsatisfactory, and unreliable in many ways, no substitute for it has been found. Its function is to serve as an outline of questioning and prompting, as a system of signposts pointing out pathways that should be followed, as a land-marked map of unexplored territory. It tends to prevent superficiality and snap-judgment during diagnosis. It conserves time and energy. When used by a trained examiner who appreciates its weaknesses and limitations and who is alert to follow up any significant leads that appear, it gives us a picture of the individual which is of inestimable value. When used by a poor examiner who merely asks the questions and records the answers, or who loses himself in a mass of irrelevant information, it is practically worthless.

Rapport. In administering the case history, it is first necessary to get sufficient rapport to insure an earnest desire to coöperate and a feeling of ease in communication. The achievement of such rapport is an art which can be learned and improved by intelligent endeavor. In general,

it is wise to adhere to the general phraseology used by the person being questioned, to adopt the manner, not of a cross-examiner, but of a consultant who wishes to coöperate in the solution of their common problem. The examiner should inhibit all expression of his own individuality, remaining absolutely impersonal. His function is to serve as an intelligent, understanding human ear. His dominant attitude should be one of encouraging interest, and never one of sympathy. He must keep out all expressions of surprise or censure. He is an explorer, not a judge.

Administering the case history. While the parents or the case himself is usually the source of most of the information, it is generally necessary to interview other associates of the speech defective. Former teachers, the family doctor, welfare investigators, and neighbors or friends may be called upon. The speech defective is often asked to get the coöperation of his former associates in determining the early symptoms or reactions toward his speech defect. These individuals often provide more information than the parents. While the majority of questions should be made as pointed as possible, a few general questions appropriate to the material in each major section should be used. Questions should be phrased so that the influence of suggestion will not prejudice the answer. An exception to the latter rule, however, is found in the recommendation that delicate questions be asked so as to favor an affirmative answer. Answers should be recorded immediately, and the student should master a system of abbreviations or shorthand so that there will be no delay. One should always distinguish in the recording between the person's actual answers and his own interpretation of those answers. The examiner should perfect himself in the art of interrupting irrelevant vocal wanderings and bringing the parent back to the point in question. It is unwise to have the child present during questioning of the parent, and except when the relationship

between parents is being studied, it is wiser to question only one at a time. The summary of important case-history findings should be written up as soon as possible.

The case histories which are given in this chapter are phrased in the form of direct questions. This policy was chosen because the text is intended for beginning students in speech correction, and experience has shown the author that such students require this guidance. It must be emphasized repeatedly that each question is merely the first of a series of supplemental queries when the answer indicates that vital information may be forthcoming. No examiner will ask all the questions, nor will he confine himself to them alone. The case histories which follow are of two types, general and special. The general case history may be considered the device used to procure a picture of the individual's background and physical, mental, personality, and speech development. A shorter form of this history may be obtained by using only the starred items for exploration. Demands upon the teacher's time and the overwhelming case load frequently experienced in public-school work occasionally necessitate this compromise, but the short case history is seldom used except for certain simple types of articulatory or voice cases. In addition to the general case history, the appropriate special case history should be used. Even as the general case history is used for exploration of the person having the speech defect, so the special case history is used to tap the parent's fund of information concerning the causes, development, and consequences of the speech defect itself.

GENERAL CASE HISTORY FORM

Person Interviewed.....Interviewer

Name of Case.....Date of Birth.....Sex.....

Address.....Telephone Number.....

Rapport

GENERAL CASE HISTORY FORM (*Continued*)

1. Father

*Name

Age (if dead, date and cause of death)

Handedness.....Education.....Occupation.....

Religion.....Health.....Nationality.....

*Type of speech defect, if any.....

Type of physical defect, if any.....

Nervous diseases.....Excesses (liquor,
drugs, etc.)

Marital history: (separation, divorce, previous marriage, etc.)

.....

Attitude toward child's defect.....

2. Mother

*Name

Age (if dead, date and cause of death).....

Handedness.....Education.....Occupation.....

Religion.....Health.....Nationality.....

*Type of speech defect, if any

Type of physical defect, if any

Nervous diseases

Marital history

Attitude toward child's defect

3. Other Relatives: (Write number of people having the following disorders)

	<i>Physical</i>	<i>Speech</i>	<i>Other</i>
	<i>Defect</i>	<i>Defect</i>	<i>Important</i>
			<i>Information</i>

*Brothers

*Sisters

Mat. Grandmother

Mat. Grandfather

Mat. Aunts

Mat. Uncles

Pat. Grandmother

Pat. Grandfather

GENERAL CASE HISTORY FORM (*Continued*)

	<i>Physical Defect</i>	<i>Speech Defect</i>	<i>Other Important Information</i>
Pat. Aunts			
Pat. Uncles			
Other persons living in home			

BIRTH HISTORY

Give age of the mother at the beginning of the pregnancy
 Age of the father Number of months of pregnancy
 Weight of child at birth Length of body at birth

Prenatal Conditions

Give the approximate weight and height of the mother at the
beginning of this pregnancy

Was mother working during the pregnant period?

If so, what kind of work? How soon did she
 stop before the birth?

How soon did she resume her activities after the birth?

What was the condition of the mother's health during preg-
 nancy? Good, fair, poor. Was mother able to eat regu-
 larly and retain the food?

Did mother have any severe shocks during pregnancy?
 Injuries?

Was mother examined by a physician before and during preg-
 nancy?

Was the pelvis measured?

What comments did the doctor make?

Will you furnish us with the name and address of the
 physician?

Name	Address		
	Street	City	State

Birth and Postnatal Conditions

Number of hours of labor, including the time from the first
 pains until the expulsion of the afterbirth

*At birth was the baby delivered feet first, head first, breech

BIRTH HISTORY (*Continued*)

(hip) first, or by Caesarean operation?

*Did delivery necessitate the use of instruments?

*Were there any injuries? If so, where?

Did baby have difficulty initiating breathing? If so, how was breathing started?

How long was it before he started breathing normally? Did he cry as soon as he was born?

Was it loud? feeble? Did he nurse as soon as he was placed at the breast or did he need to be coaxed? How long did this condition last?

Did he move around much the first two or three days or was he still and quiet? Was his pulse strong, weak, slow, fast, normal?

Was the soft spot on the top of the head soft and concave or hard and bulging?

Did the baby have convulsions? blueness of the body, lips, or feet? slow blood clotting time?

slight bleeding about the nose and mouth? twitchings of the muscles of the face?

Was he one of a pair of twins? If so, was he the strong or weak one?

Did the head have an abnormal molding immediately after birth? Was mother attended by a doctor, nurse, midwife, others?

DEVELOPMENTAL HISTORY

1. Was baby breast fed? For how long?

2. Why was he weaned?

3. Was baby bottle fed? For how long?

4. Did the bottle milk agree with him?

5. Were both fontanelles closed before child was 20 months old?

*6. Was the child's rate of growth seemingly normal?

If not, why not?

*7. Give age in months at which the following took place:

First tooth Full set of teeth

Full set of second teeth Creeping on all

THE CASE HISTORY

DEVELOPMENTAL HISTORY (*Continued*)

fours Sitting alone Walking alone
 Feeding self..... Got voluntary control of bowels Got voluntary control of bladder..... Using spoon Using any object as tool.....
 Do you have any other information with regard to the child's development?

- *8. The following is a list of common childhood diseases. Please give age of child when disease occurred, whether it was serious or mild, whether the child had a high fever, and any noticeable effects which followed it:

Tonsillitis
 Whooping cough
 Pneumonia
 Scarlet fever
 Typhoid fever
 Tuberculosis
 Pleurisy
 Chicken pox
 Smallpox
 Influenza
 Diphtheria
 Measles
 Mumps
 St. Vitus dance
 Convulsions
 Rickets
 Enlarged glands
 Heart trouble
 Rheumatism
 Thyroid disturbances
 Nervous trouble
 Infantile paralysis
 Any others

9. Was child excessively spoiled and indulged because of his illness?.....
 *10. Has child ever been seriously injured? State nature, age at injury, and effects

DEVELOPMENTAL HISTORY (*Continued*)

11. Was the child: very active, fairly active, very inactive?
.....
12. Would you say that the child was slow, average, or rapid
in his general development up to three years of age?
.....

Present Physical Condition of Child

- *1. What is the child's weight..... and height.....
at present time?
- *2. Does the child have any physical deformities?.....
What are they?
3. Has the child had a physical examination lately?.....
What were the main findings of his examination?.....
Who was the physician?.....
4. Is there any abnormality in the following:
 - a. Size of tongue.....
 - b. Protrusion of upper or lower jaws.....
 - c. Arrangement of teeth.....
 - d. Palate.....
 - e. Nasal passages
5. Has he ever had tonsils and adenoids removed?.....
Tongue-tie clipped?.....
6. Does the child have any defect in hearing?.....
Seeing?.....
7. Is the child usually in good health at the present time?
.....
- *8. Is he: very energetic?.....; fairly energetic?.....;
not very energetic?.....

Coördination: Check the following items according to whether the child shows inferior, average, or superior skill.

Gracefulness	Dancing	Skiping	Jumping
Throwing	Catching	Kicking	Sewing
Cutting	Drawing	Writing	

Mental and Educational Development

1. Has the child ever had a mental or intelligence test?.....
What was the name of the test used?.....
2. What was the I.Q. obtained, or general ranking?.....

DEVELOPMENTAL HISTORY (*Continued*)

- *3. If the child is in school, in what grade is he at present?
- *4. Are his marks above average, average, or below average?
- *5. Has the child ever failed a grade? Has he ever skipped a grade? Which one?
- *6. What are the highest marks the child has ever received?
In what subjects?
- *7. What are the poorest marks the child has ever received?
In what subjects?
- 8. Is the child frequently tardy? Why?
- 9. Does the child play truant?
- 10. Has the child been absent from school very often?
If so, for what reason?
- 11. Has the child been punished by his teacher?
Why?
- *12. Does the child like school? If not, why not?
- 13. Which of the child's teachers does he like the most?
- 14. Teacher's name School
- 15. What other schools has the child attended?
When?

Handedness

- 1. Have the child's hands ever been bandaged, tied up, or restrained in any way? For what reason and how long?
- 2. At what age did he show a definite tendency to favor one hand while eating? Which hand? Up to that age, did the child use either or both hands indiscriminately?
- *3. Did anyone ever try to influence his handedness in order to change him from left to right or vice versa?
How?
- 4. What is the attitude of the father toward left-handedness?
- 5. What is the attitude of the mother toward left-handedness?

DEVELOPMENTAL HISTORY (*Continued*)

6. Did any injuries or illnesses ever change his handedness?
.....
- *7. Has child ever written backwards?.....
- *8. Are there any activities which he can do better or as well
with the usually nonpreferred hand?.....What
are they?.....

Play

1. Give names and ages of the three children with whom the
child plays most often.....
- *2. Is the child the follower or the leader?.....
3. Do they tease the child?.....
4. Do they fight with him?.....
5. Do they get along with him?.....Do any of them
have speech defects?.....
6. What games does he prefer to play?.....
7. What toys does he prefer?.....
- *8. Does he play alone as well as he does with other chil-
dren?.....
9. Does he prefer to play alone?.....
- *10. Which parent does the child prefer?.....Why?
.....
- *11. Which playmate does the child prefer?.....Why?
.....
12. Who took care of the child when the mother was absent?
.....

Language Development

- *1. How many months old was the child when he began to
say single words?.....; simple sentences
and phrases?.....
2. What were the first single words spoken?.....
3. Give any other examples of the child's early speech with
the approximate dates for each.....
4. What method was used in teaching the child to talk?
.....
 - a. Who did most of it?.....

DEVELOPMENTAL HISTORY (*Continued*)

- *b. Do you feel that the child was overstimulated or understimulated with respect to speech?.....
- c. Did he understand what was said to him before he had learned to talk?.....
- *d. Did anyone talk baby talk to child?.....
Who?
- e. Did anyone use double-talking to child?.....
Who?.....
(Double-talking is like this: We-we-will-will-go-go.)
- f. Were the child's wants usually anticipated before he could communicate the need?.....
- g. Did the child gesture much in attempting to communicate?.....
- h. Do you think that the child's present vocabulary is superior, average, or inferior to other children his age?
- i. Did the child often surprise you by using large words?.....
- j. Did the child habitually mispronounce certain words?.....
Give samples.....
- 5. Were there any sounds that he could not say?.....
Which?.....
- *6. Did the child ever lisp?..... Describe.....
- *7. Was the child taught to speak pieces?..... Was he often called upon to perform before strangers or friends of the family?.....
What was his usual attitude toward such demands?.....
- 8. Has there ever been any tongue-tie?.....Cleft palate?.....Hare lip?.....
- 9. Was there any marked articulatory defect?.....
- 10. Describe the rate, intensity, and pitch of child's speech with respect to its being rapid-average-slow; loud-average-soft; high-average-low.....
- *11. Did the child ever tend to say words backwards ("got for" instead of "forgot," etc.)?.....Give examples:.....

DEVELOPMENTAL HISTORY (*Continued*)

- *12. Was the child generally retarded in speech development?
.....
- 13. Was the child very talkative, average, or rather silent and quiet?.....
- 14. Was any foreign language taught to the child or commonly spoken by his associates?.....

Home

- 1. In what type of community is the home located: rural, town, city?.....
- 2. Do the parents own or rent the home?.....
- 3. How many rooms in the home?.....
- 4. Check the following items in possession of the family: car; piano; radio; 100 or more books; daily newspaper; gas, oil, or electric kitchen stove.
- *5. Check word which most nearly describes economic condition of family: very poor; poor; comfortable circumstances; well-to-do.
- 6. Check phrase which most nearly describes father's attitude with an "F," and phrase which describes mother's attitude with an "M."
 - a. Has no cultural interests (seems to live only to work and eat).....
 - b. Has slight interest in other people's experiences, likes radio, likes magazine stories, does some social visiting.....
 - c. Has a hobby in some creative field (music, pictures, cabinet making, gardening, reading, etc.).
.....
 - d. Takes a specialized interest in one of the arts: reads widely; is aware of other places and times; discriminating taste.....
- 7. Is there any family friction with regard to money matters, religion, or anything else?.....Is child aware of it?.....
- 8. Are both parents usually at home in the evening?.....
- 9. Does the child have plenty of playthings or amusements?

DEVELOPMENTAL HISTORY (*Continued*)

10. Are the neighbors congenial? Do the parents like the neighbors?
11. Do the parents play with the children?
12. Has the child ever lived in another town?
- *13. Of what things is the father proudest?
- *14. Of what things is the mother proudest?
- *15. What things have made the father unhappy?
- *16. What things have made the mother unhappy?
- *17. Of what things is the child proudest?
- *18. What things have made the child unhappy?

**Childhood Problems*

Following is a list of common childhood problems. Indicate how often these problems occurred in this child by encircling the letter which most clearly describes it. O indicates that it occurs often, S indicates seldom, and N indicates never.

- | | | | |
|---|-------|-----------------------|-------|
| 1. Nervousness | O S N | 16. Tongue sucking | O S N |
| 2. Sleeplessness | O S N | 17. Hurting pets | O S N |
| 3. Nightmares | O S N | 18. Setting fires | O S N |
| 4. Bed wetting | O S N | 19. Constipation | O S N |
| 5. Playing with sex organs | O S N | 20. Thumb sucking | O S N |
| 6. Walking in sleep | O S N | 21. Face twitching | O S N |
| 7. Shyness | O S N | 22. Fainting | O S N |
| 8. Showing off | O S N | 23. Strong fears | O S N |
| 9. Refusal to obey | O S N | 24. Strong hates | O S N |
| 10. Rudeness | O S N | 25. Queer food habits | O S N |
| 11. Fighting | O S N | 26. Temper tantrums | O S N |
| 12. Jealousy | O S N | 27. Whining | O S N |
| 13. Selfishness | O S N | 28. Stealing | O S N |
| 14. Lying | O S N | 29. Running away | O S N |
| 15. Smoking | O S N | 30. Destructiveness | O S N |
| 31. How did the child's associates (parents, etc.) react to these problems? | | | |
| 32. How is the child usually disciplined and who does it? | | | |
| 33. What types of discipline are most effective?
Least effective? | | | |

DEVELOPMENTAL HISTORY (*Continued*)**Adult Developmental History**Vocational*

1. What opportunities did the case have for earning money as a child?.....
2. Did he have an adequate allowance?.....
3. What positions have been held? Give salary, working conditions, length of time employed, reason for leaving.
.....
.....

Educational

1. Preferred subjects in secondary schools and college.....
2. Subjects disliked.....
3. Attitudes toward instructors.....
4. Extra-curricular activities.....
5. Scholastic record.....
6. Reasons for quitting school.....
7. Conflicts with school authorities.....
.....

Sexual experiences: (Indicate type, frequency, and attitudes toward activity)

Social

1. Favorite associates.....
2. Disliked associates.....
3. Recreational activities.....
4. Arrests, probations, commitments to institutions.....
.....

SPECIAL CASE HISTORIES

Articulation Cases

1. Has the child ever had any other speech defect?.....
.....

SPECIAL CASE HISTORIES (*Continued*)

2. Was the child slow in learning to talk? In what way?
Did he ever lose his speech entirely?
3. With which sounds did he seem to have most trouble?
4. Did he ever have a mouth injury?
5. Was he ever tongue-tied?
6. Has he had his tonsils and adenoids out? Did any
speech defect result?
7. Has the child ever had any other mouth or throat opera-
tion?
8. Did the child ever wear a brace on his teeth?
9. What dental work has been done?
10. Did the child have any accident to his first set of teeth?
.. .. .
11. Was his first set of teeth malformed?
12. Has the child's speech shown any improvement recently?
.. .. .
13. With what sounds or words does the child have trouble?
.. .. .
14. Does he have most trouble with these sounds at the be-
ginning, middle, or end of words?
15. Do you think the child's speech disorder may be due in
part to:
 - a. being stimulated by baby talk?
 - b. being stimulated by foreign or vulgar speech?
 - c. lack of proper training by parents?
 - d. negativism or refusal to conform to the speech
standards of the parents?

SPECIAL CASE HISTORIES (*Continued*)

16. What else may have caused it?.....
17. At what age did his speech difficulty begin?.....
18. Has it ever entirely disappeared?.....
19. What has been done to correct it?.....
20. Can you give us any other information about his speech?.....
21. How sensitive is the child about his defect?.....
22. Is he scolded or teased about it?.....
23. Can the child carry a tune? Is his hearing normal?.....

Voice Cases—General

1. Is the subject able to produce any voice at all? Has he ever lost his voice? Has he ever overstrained it?.....
2. What differences appeared after puberty?.....
3. Can the subject carry a tune alone? In unison?.....
4. What throat diseases or injuries has he had?.....
5. Is his voice like that of any other member of the family or any habitual companion?.....
6. What do you think caused the disorder?.....
7. Are there certain conditions or situations which make it worse? At what times is it most noticeable?.....
8. Has the subject been under any prolonged emotional strain?
9. Is the child sensitive about his voice?.....

SPECIAL CASE HISTORIES (*Continued*)

10. What has been done to correct his voice defect?
11. Has the child habitually spoken through clenched teeth or out of the side of his mouth for any length of time?
12. Does the child do a lot of whining? Screeching?
13. Does the child seem to be much more tense than the average child?
14. Has the child ever talked in a monotone or used a peculiar pitch level?
15. Does there seem to be any retardation in sexual development?

Nasality and Denasality

1. Has the child's voice always been nasal?
2. Are there times when he seems to speak without nasality? When?
3. What vowels does he seem to nasalize most?
4. What consonants?
5. Has he ever had his adenoids and tonsils removed? When, and how bad were they?
6. Has he ever had any injury to his nose or throat?
7. Do any others of the child's family or acquaintances speak in a nasal tone?
8. Has the pitch of the child's voice always been about as high as it is now?
9. Has the child been under any prolonged emotional tension or nervous strain? Is there anyone else in the family who shows such a condition?
10. Is the child aware of his peculiar voice quality? Is he sensitive or ashamed about it?
11. When he lowers his voice and relaxes, does he have as much nasality?

SPECIAL CASE HISTORIES (*Continued*)

12. Has the child suffered much from head colds or catarrh?
13. Has the child ever had an operation on his nose?
14. Can the child gargle?
15. Has the child ever had sinus trouble?

Delayed Speech Cases

1. Is the child superior, average, or inferior mentally?
2. Is the child hard of hearing?
3. Has the child ever had any disease or trouble with his ears?
4. Are there any deaf people in the child's immediate family?
5. Has the child ever shown short periods of speech?
6. Did the child ever have more speech than he does now?
7. Has the child ever uttered words under strong emotion which he has never said since?
8. Has the child ever seemed to have periods when he could not understand other people's speech?
9. Were there any injuries to the mouth?
10. Were there any bad shocks during speech?
11. Were there any serious illnesses during the first year?
12. Were two languages spoken in the home?
13. Has the child ever been punished for speaking or during speech?
14. Is the child a twin?
15. Did the parents overstimulate or understimulate the child?

SPECIAL CASE HISTORIES (*Continued*)

16. What people did the child dislike during the first two years?
17. Is the child ambidextrous?.....
18. Was the child jealous of any other person?.....
19. Does the child use his silence as a way of getting more attention?
20. Has the child ever had any sudden fainting spells? paralysis?
21. Is the child isolated too much?.....
22. How do the parents try to teach him to talk?.....
23. Are the child's wants usually anticipated and fulfilled before he expresses them?.....
24. What sort of speech standard do the parents insist upon?
25. What history of negativism is present?.....
26. Check: threats; severe punishment; speech conflicts; competition for speech; impatience; attitudes of parents and other children.

*Stuttering Cases**History of stuttering*

1. Give approximate or exact date at which stuttering was first noticed.
2. Within the month immediately preceding the appearance of stuttering, did the child experience:
 - a. A severe fright?.....
 - b. A severe shock of any kind?
 - c. Severe sickness with high fever?.....
 - d. Severe punishment?
 - e. A great deal of excitement or emotional upset?.....

SPECIAL CASE HISTORIES (*Continued*)

- f. A situation involving great need for immediate communication in which he was unable to say what he wanted to?.....
- g. A situation involving communication but without sufficient vocabulary to enable him to continue?....
- h. A situation in which he tried but was unable to compete successfully for attention or speech?.....
- i. A change in social environment?.....
- j. Use of the nonpreferred hand?.....
- k. Peculiarities in sexual behavior?.....
- l. Thyroid disturbances?.....
- m. Any other?.....
- 3. Did any other defect occur at the same time that stuttering did?.....
- 4. Who first noticed the stuttering?.....
- 5. In what situation was it first noticed or commented upon? Under what circumstances did it occur?.....
- 6. Were the first signs of stuttering repetitions of the whole word (boy-boy-boy), or repetitions of the first letter (b-b-boy); or repetitions of the first syllable (ca-ca-cat); or complete blocks on the first letter (b...oy); or prolongations of the vowel (caaaaaaat)?.....
- 7. If repetitions, about how many times did they occur before the word came out?.....
 - a. Were all signs of stuttering alike?.....
 - b. Did the child stutter in several different ways?.....
 - c. If so, in what ways did they differ from each other?.....

SPECIAL CASE HISTORIES (*Continued*)

- d. Did the first blocks seem to be located in the tongue, lips, chest, diaphragm, or throat?
 - e. About how long did each individual block (on one word) seem to last? (Imitate and time yourself.)
 - f. Did the child stutter easily or exert some force, much force, or terrible forcing at the time when you first noticed his stuttering?
8. Were the words stuttered upon the words which began sentences, or were they scattered throughout the sentence?
 9. Was the stuttering confined to one single word, or two or three words, or to no particular words?
 10. Were there any particular sounds with which he seemed at first to have more trouble on? If so, what were they?
 11. When stuttering first began, did the child ever avoid a speech situation because of his stuttering? Give examples, if any.
 12. Did he pause noticeably before attempting a word?
 13. Did he ever repeat a word until he had said it without stuttering?
 14. Did he ever prolong a word preceding the word stuttered upon?
 15. Did he ever repeat a phrase several times before attempting the word upon which he stuttered?
 16. Having had trouble with a word in a sentence, did he ever repeat the whole sentence until it was said without any stuttering?
 17. Did he ever obviously substitute another word for one with which he was having trouble?
 18. Having stuttered upon a word, did he increase the rate, pitch, or intensity of the other words which followed it?

SPECIAL CASE HISTORIES (*Continued*)

19. At the time when stuttering was first noticed, did the child seem to be aware of the fact that he was speaking in a different manner?
20. Did he seem to be indifferent to his blocks?
21. Did he ever show surprise or bewilderment after he had had trouble on a word? If so, how did he show such reactions?
22. Did the blocks at first seem to the stutterer to be unpleasant?
 - a. Why do you think they were unpleasant if they were?
 - b. Do you think he felt irritated with himself? Frustrated?
 - c. Did he ever show anger when anyone helped him with the word?
 - d. If not, what was his reaction?
 - e. Did he ever show any fear of stuttering?
 - f. If so, how did he show it?
 - g. Did he ever show any shame as a reaction to stuttering?
 - h. If so, how did he show it?
 - i. Did he ever show any flushing? Paleness? Eye-bulging? Heart-pounding? Gasping? Sweating? Peculiar body movement as a reaction to his stuttering?
23. Did the child ever seem conscious of his stuttering in any way at first? If so, amplify your answer. After having a lot of trouble on a word, did he ever:
 - a. Suddenly stop trying?
 - b. Suddenly leave the speech situation?
 - c. Shout the word? Cry? Hit someone? Smash something? Spit upon somebody? Hide his face? Laugh? Do something else?

SPECIAL CASE HISTORIES (*Continued*)

- d. Seem to be a little more careful with his speech in attempting words on which he had difficulty? How? By lowering voice? By slowing down? By ceasing other bodily activity for the moment? By looking straight ahead of him for the moment? By shifting his gaze away from the listener? Any other way?
24. What attempts have been made to treat the child for his stuttering?
25. At the time when stuttering was first noticed, were there any situations in which he seemed to have more trouble? If so, what were they?
26. Were there any people to whom he stuttered more often? Who?
27. Were there any topics of conversation with which he had more trouble?
28. Did he seem to have more trouble when narrating something?
29. When asking questions?
30. When answering questions?
31. When interrupting?
32. Did he ever stutter when overheard talking to himself?
33. Did he talk to children with less trouble than to adults?
34. Did excitement seem to cause more stuttering?
35. Did he talk to strangers with less trouble than to people he knew well?
36. At the time when stuttering began, did fatigue, fear, illness, or pressing need for communication seem to cause more trouble?
37. Did he stutter more on words which were new to him and which he had not or did not use often as yet?
38. Did he stutter more or stutter less on words which he had been using a long time—that is, "pet" words or stock phrases?

SPECIAL CASE HISTORIES (*Continued*)

Which ones? Did he stutter more or less in these languages than in English?.....

40. When talking without stuttering, did he seem more active generally and more animated or lively—"more in the spirit of speaking"—than when stuttering?.....
41. When saying something on the spur of the moment—blurting it out as though he had given no thought to what he was going to say—did he stutter more or less than when he seemed to decide what he was going to say before speaking?.....

Development of stuttering

1. Since the stuttering first began, has there been any change in the stuttering symptoms?.....
2. Did you notice a gradual increase in the number of repetitions per word stuttered upon?.....
3. Did you notice a gradual increase in the number of times the stuttering occurred?.....
4. Were there any instances in which the number of troublesome words and number of repetitions suddenly increased?.....
5. Were there any periods (week or month) when this seemed to have occurred?.....
6. Can you give any explanation for these "bad" periods?.....
7. If possible, give their approximate dates and causes.
8. Did there seem to be any period of change from repetitions as the usual form of stuttering to complete blocks (b-b-boy to b...oy)?.....
9. Was there ever a time in which repetitions began to end in complete (though temporary) blocks (b b b...oy)?.....
10. Was there ever any time when complete blocks were released in the form of repetitions (b....b boy)?.....
11. Has there been an increase in the length of time the com-

SPECIAL CASE HISTORIES (*Continued*)

plete block lasts? (Was it "b..oy" at first, and "b.....oy" now?)

12. When the complete blocks first appeared, upon what sounds or words were they noticed?
13. Did the child force when the complete blocks were first experienced or was there a mere holding of the posture until release came?
14. Did the amount of forcing increase as time passed?
15. Did it seem to be localized in any particular part of the speech organs, at first: lips, tongue, jaws, throat, chest, entire body?
16. Did there seem to be any spreading of the forcing from one of the above speech organs to others? Explain.
17. Did the stutterer ever force on the repetitions of sound or syllable?
18. If the stutterer has any facial spasms or grimaces, give approximate date of their first occurrence, and describe their nature (how they look, what he does, etc.). Can you account for their appearance? Explain what you think caused them.

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2. Hanks, L. M., "Prediction from Case Material to Personality Test Data," *Archives of Psychology*, 1936, Vol. 29, No. 207.
This author shows the reliability of the interview.
3. Kanner, L., and Lachman, S. E., "The Contribution of Physical Illness to the Development of Behavior Disorders in Children," *Mental Hygiene*, 1934, Vol. 17, pages 605-617.

Case studies showing how asthma, indigestion, etc., caused behavior problems.

4. Karlan, S. C., "Failure in Secondary School as a Mental Hygiene Problem," *Mental Hygiene*, 1934, Vol. 18, pages 611-620.

A collection of condensed case histories of mental-hygiene cases.

5. Symonds, P. M., *Diagnosing Personality and Conduct*, New York, D. Appleton-Century Co., 1931.

This text considers the theory and the methods of measurements of both personality and conduct, and includes good case-history material.

6. Travis, L. E., *Speech Pathology*, Chapter 4, New York, D. Appleton-Century Co., 1931.

A complete outline for the general examination of the speech defective—including individual history, physical, intelligence, and personality examinations, measurements of special abilities and disabilities, and measurements of educational progress. A long bibliography of tests is included.

7. West, R., Kennedy, L., and Carr, A., *The Rehabilitation of Speech*, Chapter 12, New York, Harpers, 1937.

An outline for case study, emphasizing particularly the etiology of the defect and the analysis of the speech problem itself.

Special Tests and Examination Methods

In addition to the case history examination described in the preceding chapter, certain special examinations must frequently be used. Some of these can be performed by the professional associates of the speech-correction teacher, but, since very often these persons are not available when most needed, the speech-correction teacher should have sufficient skill to administer the tests efficiently. Among these special tests are those of intelligence, personality, auditory acuity, auditory memory span, pitch discrimination and performance, laterality, educational achievement, breathing, and muscular coördination. The speech correctionist should have a knowledge of the limitations of each test and should be able to apply the test results to diagnosis and therapy. Since most of these special tests are described adequately elsewhere, we shall confine our discussion primarily to their nature and uses in speech correction.

Intelligence tests. The part played by low intelligence in producing articulatory and voice disorders is well known. Not only are children of low intelligence slow to learn to talk, but their speech patterns are frequently slurred, confused with sound substitutions, and complicated by peculiar intonations. Motor skills are retarded, and speech, the most complicated of all motor skills, certainly demonstrates the effect of this retardation. The feeble-minded child's lack of discrimination, his distractibility, and his lack of

response to social stimulation—all contribute to inaccurate and defective speech. Moreover, the same factors make rapid remedial work impossible and necessitate techniques other than those ordinarily employed.

On the other hand, the child of average and superior intelligence can be expected to respond to adequate therapy if his emotional reactions do not interfere. The brilliant child especially can be relied on to take charge of his own case to a large extent, and such self-reliance should be encouraged. These and other equally obvious observations point out the great necessity for a valid estimate of the child's intelligence. An excellent discussion of personality and intelligence tests from the point of view of the speech correctionist will be found in the text *Speech Pathology* by Travis.

Personality tests. Although personality tests will never serve as substitutes for the intensive personality study which a great deal of speech reëducation demands, they are able to give us a quick picture of major conflicts and peculiar behavior patterns. In general, the test best suited for the adult speech defective is the Bernreuter, while that most suitable for children is the Haggerty-Olson-Wickman Behavior Rating Scale. The contribution of such tests to the understanding of the speech defective is very clearly illustrated in Johnson's monograph, *The Influence of Stuttering on the Personality*. The use of these tests is recommended for cases of severe stuttering, functional voice cases, and such articulatory disorders as neurotic lipping.

Achievement tests. These tests are used in speech correction primarily for discovering whether or not a child's educational retardation is due to the influence of his speech defect on reading skills. Articulatory disorders commonly reflect themselves in reading, producing similar errors there, and stuttering and voice cases frequently dislike oral reading so much that it affects their silent skills. Remedial

reading can easily be combined with remedial speech work, and improvement in both will frequently solve the child's other scholastic problems. Two excellent batteries are the Stanford Achievement Tests and the Unit Scales of Attainment, but these should be supplemented by the diagnostic reading tests of Gates and Monroe.

Auditory acuity. The importance of hearing to speech has been discussed elsewhere and need not be emphasized again. However, all speech-correction teachers should familiarize themselves with audiometric technique and the interpretation of audiograms. The use of the proper hearing aid will work wonders with a refractory articulatory case whose acuity is defective in the frequency range of the sounds he cannot pronounce. Not only does a hearing loss affect diagnosis and prognosis, but it also largely determines the type of remedial methods to be used. An excellent discussion of hearing tests will be found in *Speech and Hearing*, by Fletcher, and a very illuminating application of these tests to speech correction is given in *The Rehabilitation of Speech*, by West, Kennedy, and Carr. The results of all articulatory tests and many of the voice tests should be scrutinized carefully to determine whether or not the errors point to defective hearing as a causal factor.

Auditory memory span. This test is used in determining if the cause of an individual's articulatory defect is due to an inability to retain auditory impressions (especially those without syntax or meaning). Such inability is rather rare, but they produce such severe articulatory and reading disabilities that auditory memory span tests are needed. There are two forms of these tests—one involving the delayed response and the other using a series of nonsense sounds. In the first type, the subject is told that the examiner will pronounce a certain sound to which he is to listen carefully, and that he must wait until the examiner raises his hand before he attempts to repeat it. With the

proper motivation and rapport, any person of normal intelligence and hearing who is more than six years old should be able to repeat the following syllables after a delay of five seconds: *ab*; *eeg*; *aze*; *oop*; *ife*. The second, or series, type of auditory memory span test will be found in the text by West, Kennedy, and Carr.

Pitch discrimination. Tests of pitch discrimination will be discussed in the voice section of the chapter on speech tests. Besides those mentioned there, the Seashore tests and the Whipple tuning-fork tests may be used. Both of these are discussed in the references at the end of this chapter.

Laterality. Much research has recently pointed out the effect on speech of a shift of handedness or of confused sidedness or laterality. Reliable histories of shift of handedness are difficult to procure because of the lapse of time, the effects of imitation, and the reluctance of parents to confess such a causal factor. Therefore, it is necessary to use laterality tests to determine whether or not confused laterality is a contributing or essential cause of the child's speech disorder. The speech disorders usually so affected are stuttering and delayed speech. Unfortunately, most of our measures of sidedness are either tests of speed, strength, and accuracy or expressions of hand preference, all of which are those features most susceptible to environmental influence and training. A few tests of so-called native-sidedness do exist, and, although crude, they are used in a battery together with the other measures to determine if laterality is a causal factor. Tests of speed, strength, and accuracy are most important diagnostically when they demonstrate ambidexterity or favor the usually nonpreferred hand. Many tests may be used for measuring these three factors, but the three most convenient and adequately standardized are the Wellman Tracing Path test for accuracy, the Durost asterisk test for speed, and the Smedley

dynamometer test for strength. All of these tests must be administered in such a fashion as to reduce distortions due to training. Each of them is taken: first, with the non-preferred hand; next, with the preferred hand; next, with the preferred hand; and last, with the nonpreferred hand. The scores should be averaged and expressed as fractions—the numerator representing the average accuracy of the right hand, the denominator, that of the left. Directions for administering the first two of these tests are given in their respective forms. Directions for the dynamometer test are simply to hold the dynamometer at full arm's length and apply the pressure. Scores should be recorded on a special test form similar to that given at the end of this chapter.

The most valid and reliable hand-preference questionnaire is the one standardized by C. J. Hull. It requests the student to indicate if the right, left, or either hand performs the activity when hammering, cutting with scissors, distributing cards, spinning a top, winding a watch, using a toothbrush, sharpening a pencil, writing, drawing pictures, throwing, and using a tennis racket. She expressed her results in terms of a handedness index computed according to the formula: $R + \frac{1}{2}E \div N = \text{Index}$.

Tests of so-called native-sidedness include: eyedness, convergence strength, thumbedness, footedness, and the vertical board or critical-angle board tests, the last mentioned being the most reliable and best standardized. Eyedness may be tested by providing the subject with a paper cone, the large end of which the subject is requested to place to his face as he looks through the cone to view the experimenter's eye. The cone prevents the use of both eyes at any one time, and the one used is termed the dominant eye. The experimenter should give at least ten trials as he moves about. Convergence strength is tested by requiring the subject to focus his eyes on the end of a lead pencil as

the experimenter slowly brings the pencil in perpendicularly to the bridge of the subject's nose. The experimenter records which eye fails to "break" or swing outward. This eye is termed the dominant eye in convergence. At least ten trials should be recorded. Thumbedness is easily determined by requiring the subject to clasp his hands, interlocking the fingers in the usual fashion. The dominant

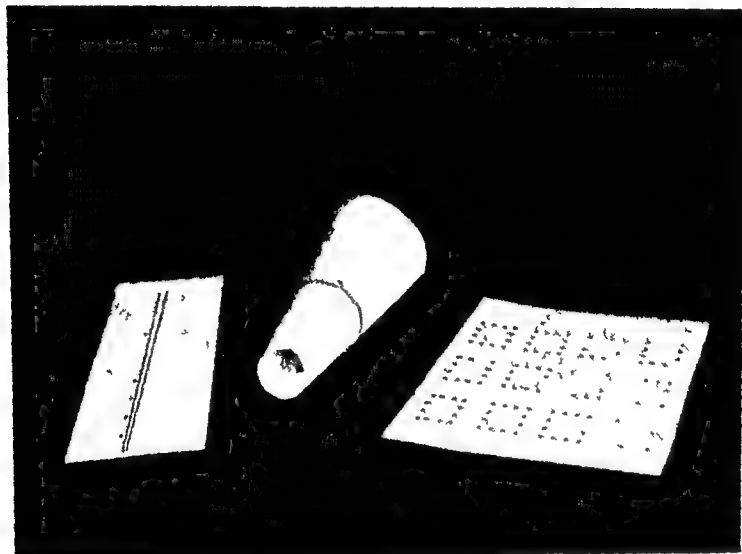


Fig 9. The cone used for testing eyedness, and the asterisk and tracing path tests of laterality.

thumb is that which is on top. Footedness may be determined by standing the subject with his back to the wall and asking him to kick the wall three times very quickly. The reliability of all of these measures is somewhat doubtful, but they are useful in indicating a general tendency in favor of one or the other side.

Vertical board test of laterality. This test consists essentially in simultaneous writing with both hands, one on each side of an upright vertical board. The patterns used are

of three types. The first is the kinesthetic, consisting of a pattern learned while blindfolded by tracing with a bimanual stylus. The pattern itself is a deep spiral groove cut into a flat board or cardboard. The examiner places the point of the bimanual stylus in the center of the spiral and, during the first trial, helps guide it as the blindfolded subject traces it. Four trials without guidance are then



Fig 10. A student being given the vertical board test of laterality. Bimanual stylus, visual pattern, and kinesthetic pattern are also shown.

required; the pattern is withdrawn, and the subject uses the stylus to draw the pattern on the table top. If the subject does not draw a good pattern, he is required to take more practice trials until he does. He is then asked to draw the same pattern reduced to one-fourth its original size on the table top. If this is successful, he discards the stylus, takes a pencil in each hand, and, at command, draws the patterns, as swiftly as he can, simultaneously with both hands on opposite sides of the vertical board. Three such drawings are required, and other patterns may be used. A

simple, two-handed stylus may be contrived by thrusting a pencil through the centers of two 4-by-1-inch strips of thick cardboard, separating them by about three inches, and using the projections of the upper strip as hand-holds and those of the lower as a means of steadying the forefingers. A large sheet of paper folded over the top of the vertical board will provide a permanent record of the performance; on each side, the hand with which the pattern was written correctly should be indicated. The second pattern is a visual pattern, held up above the examiner's head so as to prevent the subject from watching both his hands and the pattern at the same time. No blindfold is used, and the subject is instructed to follow the pattern with his eyes as he draws it with his hands on the vertical board. The third, or script pattern, consists of the drawing of a word spoken to the subject, who is again blindfolded. Typical visual patterns are asymmetrical figures with the first stroke being made vertically. Good words for the script pattern are: *boy, catch, dog*. The subject should make clear patterns and should begin instantly at command, drawing simultaneously with both hands as fast as he can. The nondominant hand will produce mirroring in all of these tests, while the dominant hand will draw the pattern correctly. In case of poor coöperation, a new pattern should be used. Keep the subject in ignorance of the fact that the test is a handedness test. If the subject mirrors with the hand normally preferred, the results tend to indicate confused laterality. Left-handed people mirror with the right hand; right-handed people do the opposite; ambidextrous individuals either mirror with both hands or do not mirror at all.

Breathing. The student should have enough familiarity with breathing records to interpret them. He should be able to recognize rehearsal, speech on inhalation, typical spasm-patterns, and fear reactions in the breathing of stutterers. He should also recognize speech on residual air,

essential causes of the speech defect, nevertheless the presence of an overshoot jaw or of an excessively long tongue must certainly be a handicapping factor in speech development. Some of us can compensate for these defects because of either training or natural desire for speech perfection, but

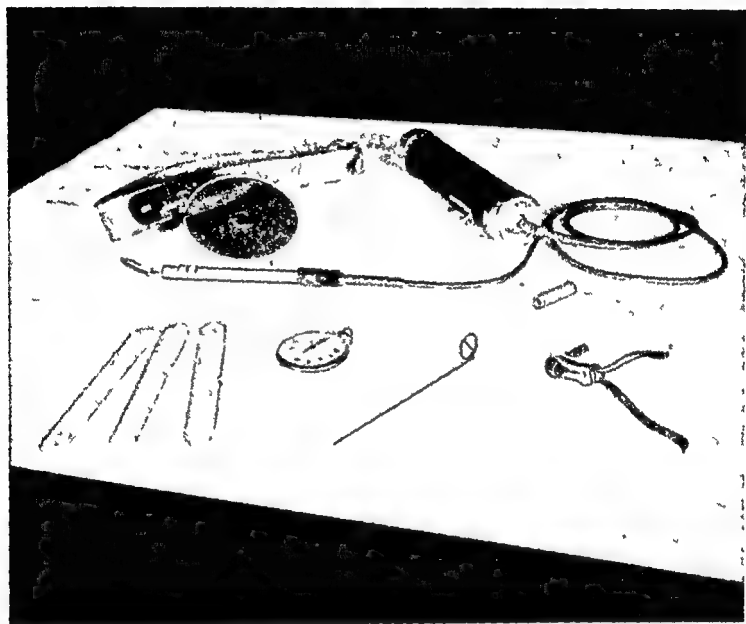


Fig. 11. Some of the equipment used in making the examination for organic defects. Tongue depressors, tooth prop, light with guttural mirror, head mirror, and nasal speculum are shown.

many others cannot. Hence the presence of these defects is important and must be taken into account in both the diagnosis and the treatment. However, the presence of some anatomical abnormality is of no importance in itself unless it stands in functional relation to defective speech sounds. For example, the presence of a harelip in a child whose sole speech error is an inability to produce the *k* sound is of no causal significance. It is also necessary to caution the in-

experienced teacher not to make a hasty diagnosis. Other causal factors may be of far greater importance than the organic defect.

Although a head mirror or laryngoscope is more convenient, an adequate examination may be made by placing the subject slightly to one side of a flashlight or a window and reflecting this light, by means of a little mirror, into his mouth. Tongue depressors, probes, and tooth props are tools easily procured. The examiner should develop a systematic routine involving quick, sure movements and requests. He should examine each structure, not only in quiescence, but also in its relation to the appropriate speech sounds. He must record all evidence of handicapping abnormality, together with a notation as to any evidence of compensatory movements in the production of speech. A convenient sequence for the examination is as follows:

1. Examine lips for presence of scar tissue or harelip. Examine during performance of *p*, *b*, and *m*.

2. Examine jaws in relaxed occlusion to note overshoot, undershot, or asymmetrical jaw formation. Examine during performance of *f*, *v*, and *th*, and note whether tongue movement is compensatory during performance of *s*, *l*, and *r* due to the relative displacement of tongue with respect to the upper teeth.

3. Examine teeth to note mal-occlusions. Record whether it is due to the upper, lower, or both sets of teeth. Record also whether it is on the right, left, or both sides. Note spaced or missing teeth according to a similar scheme. Note whether tongue habitually plugs gaps in silence or in making the following sounds: *s*, *z*, *sh*, *ch*, *j*, *zh*. Note relation of teeth to jaws and lips.

4. Note tongue to determine gross abnormality of width and length. Have subject lap tongue several times, finally leaving it out. Note any evidence of atrophy, in terms of area on both sides of mid-line, and of wrinkling. Have subject touch right and left corners of mouth alternately to determine possibility of unilateral sluggishness or paralysis. Note proximity of frenum to tongue tip. Can subject lick above upper margin of upper lip without showing bowing effect of frenum? Is there evidence

of past tongue-tie? Can subject groove tongue at will? Can subject touch hard palate with tongue tip easily? Have subject touch tongue depressor held one inch out from the teeth as you count rhythmically at a rate of three counts per second for five seconds. Note action of tongue in making *th*, *s*, *l*, *r*, *d*, *t*, *k*, *g*.

5. Examine roof of mouth to note gross abnormality in height and width of hard palate. Note tongue placement for *r* and *l*, *k* and *g*, to determine compensatory positions. Note slope of hard palate from alveolar ridge. Note whether any evidence of present or past cleft exists.

6. Examine velum for presence of cleft, shortness, uvular abnormality, atrophy, or asymmetry. Is uvula pulled to one side? Is it so long as to stick to back of tongue? Have subject phonate vowel *a* and note action of velum and pharynx. (A guttural mirror may help in this part of the examination.) Is velum too short for good closure? Note action of velum in producing *k* and *g* sounds. Determine whether gag reflex exists. Note size and condition of tonsils and part they play in velar action. Note injuries or scar tissue on pillars of the fauces. Note inflammation of the velum and surrounding tissues. Ask student to swallow a large mouthful of water. Note if any comes out of the nose. Ask student to blow up a balloon.

7. Examine pharynx as subject nasalizes vowel *a* and as he phonates a normal *a*. Note presence of adenoids, using guttural mirror. Note inflammation and amount of mucosa. Have subject alternate *m* and *ba* sounds as rapidly as possible for 5 seconds. He should be able to average at least 2 per second if a child, and 3 per second if an adult. Note presence and condition of adenoids. Is there a constant nasal drip from the nasopharynx?

8. Examine larynx. While few speech-correction teachers ever get enough experience to perform a good laryngoscopic examination, all of them should practice enough to appreciate the technique and know what picture a successful examination can produce. An excellent summary of this examination is given in the text of West, Kennedy, and Carr.

9. Examine each nostril by spreading the walls and flashing a beam of light into the cavity. Note any evidence of contraction during production of plosive and fricative sounds. Note whether septum is straight or crooked. Have subject hum and alternately compress first one, then the other, nostril. Note whether either greatly diminishes the resonance or intensity.

The autobiography. Adults and older children may be asked to write an autobiography, which should be based primarily upon the scheme for personality development sketched in Chapter V. The important differences, penalties, approvals, and reactions of the student at each of the various age or social levels should be described. The associates of the student and their characteristic reactions to his defects or assets should likewise be portrayed. These data should be cast in the form of remembered experiences as far as possible. Where an autobiography is impossible, some associate of the speech defective may be asked to write a biography from a similar point of view. The speech correctionist should check the accuracy of the speech-defective's descriptions through interviews with the parents, teachers, or friends.

SPECIAL TEST FORM

<i>Laterality:</i>	<i>Vertical Board</i>	<i>Hand Reversing</i>		
	Kinesthetic			
	Visual			
	Script			
Eyedness			R H.	L.H.
Convergence		Accuracy		
		Speed		
Reversing		Strength		
Hand Preference Questionnaire		R	L	E
Other L. H. Activities				
<i>Intelligence:</i>	Test used			
C.A.	M.A.	I.Q.		
Test qualifications				

Hearing: Examiner's report. (Clip audiogram to this sheet.)

Breathing record: Main findings:

SPECIAL TEST FORM (*Continued*)

Phonograph record: Examiner's observations:

Reading: Test used: Achievement
 test results:
 Examiner's report:

Pitch discrimination and performance:

Whistle:
 Voice:
 Following with pencil:

Auditory memory span:

Motor coördination:

Personality Test results: Test given:

Autobiographical data: Summarize: (1) the important differences mentioned by speech defective or associates, (2) the penalties or excess approvals which contributed to the development of personality, and (3) the speech-defective's reactions to those penalties or approvals.

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Speech Tests

Although the case history gives us much information about the causes and development of a speech disorder, it tells us little of what we need to know about the actual symptoms. To discover these, we use systematic methods of speech analysis. As we have previously implied, it is seldom sufficient in speech correction to discover and remove the original causes of the disorder. Frequently they no longer exist at the time the patient applies for treatment, but they have lasted long enough to set up bad speech habits which can perpetuate themselves. As we have said, speech correction is reëducation, and therefore implies error-analysis, the tearing down of defective speech habits, the substitution of correct speech habits, the removal of etiological factors, and the formation of adequate reactions to speech situations. This chapter deals with methods for making such speech analyses. It is divided into sections for each of the four major types of speech disorders.

Articulation Tests

Articulatory disorders, as we have defined them, are characterized by errors of sound substitution, addition, omission, and distortion. Each speech correctionist devises his own procedure for giving the articulatory examination. Even when students have been trained according to one standard technique, they find it necessary to make modifications to fit the individuality of each case they examine. For

this reason, we have described various procedures under each of the types of articulation tests and have provided word lists, sentences, and reading passages which the student may use as he sees fit. His task is to determine the nature, number, and characteristics of the articulatory errors as they occur in the case's speech.

The speech analysis concerns itself with determining in what sounds and under what conditions such errors occur. In order to make such an analysis, the speech correctionist needs a well-trained and discriminating ear. He also needs a systematic testing routine which will insure coverage of all the sounds in all three positions of the word (initial, medial, and final). He should determine what errors occur in spontaneous speech, in repetition after a model, and in oral reading. He should discover whether the child can discriminate the correct from the incorrect sound when they are made by the examiner. In addition, the patient's speech should be observed in unguarded casual conversation and under emotional conditions.

Spontaneous production tests. Spontaneous production of a speech sound may be tested in several ways, two of which are most commonly used. These are the naming of pictures and the answering of question riddles. For both, a common set of objects or activities is used, the names of which include all the speech sounds in all three word positions. Such a list, with the sounds classified according to manner of articulation, is given at the end of this section. The words are chosen from the lists given in *A Reading Vocabulary for the Primary Grades*, by A. I. Gates, and therefore are suited to small children as well as to adults. The technique of administering this test is simple. After gaining rapport, the teacher points to the picture and asks the child to name it. Or, for example, when using the question riddle to get the sound of voiceless *th* in the final position, she says, "Watch me bite my finger. What did I

bite my finger with?" Pictures representing the words in the test list may be cut from old magazines, and every teacher should have such a scrapbook. (An excellent collection of such material is the articulation test published by Irene Sherman, which may be purchased from the Speech Clinic, University of Minnesota.)

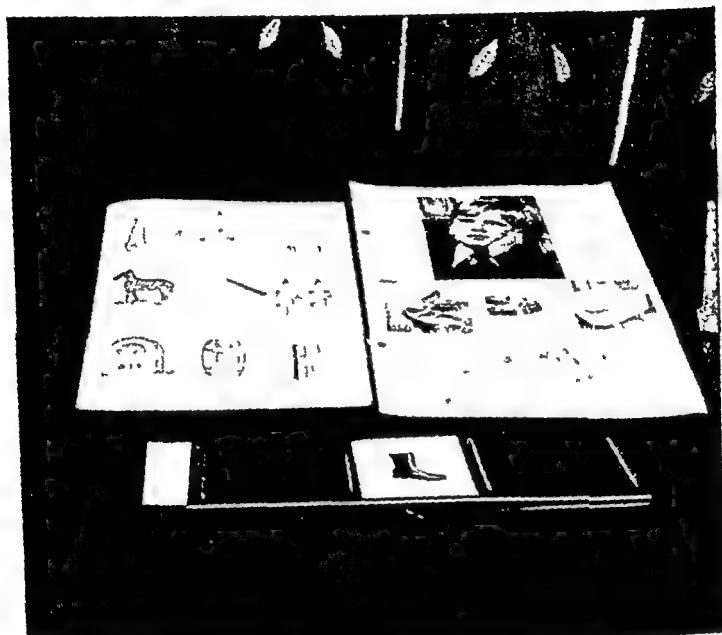


Fig. 12. Typical sets of articulation test pictures. Note the arrangement according to initial, medial, and final positions of given sounds. In the lower part of the illustration is a metal shield with an exposure window.

Repetition tests. The same word list may be used in administering the part of the articulatory analysis which requires the subject to repeat after a model provided by the teacher. The teacher merely asks the child to listen carefully, to wait a moment until the teacher lifts her finger as a signal, and then to repeat what the teacher has said. In

addition to the word lists, it is often wise to use nonsense material such as "tho, otho, oth" to determine if a child can follow a model when the effects of training are minimized. Nonsense pictures may be drawn and named with nonsense words containing the sound to be tested. The speech correctionist may also ask the child to repeat "monkey-talk" words.

Oral reading tests. Both the spontaneous production of the various speech sounds and the student's ability to repeat them after stimulation can be tested by having the student read material that has been organized to include all the speech sounds in all three positions within the word. In addition to the word lists given, the reader will also find individual sentences, one for each of the speech sounds. A continuous passage, "My Grandfather," may be used for this purpose when only a little time is available.

Discrimination tests. After the spontaneous-production and repetition-from-model tests have been given, it is necessary to determine whether or not the child can discriminate the correct from the incorrect production of the word when they are made by the examiner. This discrimination test requires the examiner to imitate the error as exactly as possible and to match it with the correct sound. Then she asks the patient which of the two was correct. One of the best procedures to follow is illustrated. The teacher says, "As you know, Johnny, you don't make some of the sounds in the right way. I now want to find out whether you can tell the wrong sound when I make it. I'm going to say this picture's name in two ways. One is right, and one is wrong. Your job is to point to the right one. Is it a 'radio' (teacher raises her right hand) or a 'wadio' (teacher raises her left hand)?" The other errors should be used in the same fashion, and repeated twice to insure against chance successes. The results of this test should then be recorded on the Articulatory Test Report.

Recording results of articulation tests. The results of all four tests should be summarized on a blank similar to that given at the end of this chapter. The words in which errors occurred may be written in phonetic transcription, or the errors themselves may be listed and described according to the substitutions, omissions, additions, or distortions which occurred. The position of the error within the word should also be indicated, since it is important in certain re-training methods. Thus, when the lisper says "thaw" for "saw," the error is recorded as *th/s (I)*. The substitution is always given first. The letter *I* in the parentheses refers to the fact that the substitution occurred in the initial position of the word. The letters *M* and *F* refer to the medial and final positions. Omissions and additions are indicated by minus and plus signs, respectively. Distortions are described by adjectives.

Other important analyses. Next, the examiner should review his phonetic transcription or notations, picking out all words in which the error might have been made, but in actuality was not. These words are of great usefulness, and the speech correctionist should always be alert to their presence in casual conversation as well as in the formal testing. Finally, the errors should be analyzed according to manner of articulation, frequency characteristics, visibility of performance, developmental order, nasality, and confusion between voiced and voiceless equivalents.

ARTICULATORY TEST MATERIAL

Lip Sounds: *P*—pie, apple, cup; *B*—boy, rabbit, bib; *M*—mouse, hammer, drum; *WH*—wheel, whistle; *W*—window, sidewalk, sandwich; *F*—fork, telephone, knife; *V*—valentine, river, stove.
Tongue-Tip Sounds: *TH (unvoiced)*—thumb, bathtub, teeth; *TH (voiced)*—the, feather, smooth; *T*—top, potato, cat; *D*—dog, Indian, bird; *N*—nose, banana, man.
Back of Tongue: *K*—cup, basket, clock; *G*—girl, wagon, flag; *NG*—monkey, swing; *H*—house, schoolhouse.

Complicated Tongue-Tip Sounds: *L*—leaves, balloon, ball; *R*—rug, orange, chair; *S*—Santa Claus, bicycle, glass; *Z*—zebra, scissors, eyes; *SH*—shoe, dishes, fish; *ZH*—pleasure, treasure; *CH*—chicken, pitcher, peach; *J*—jelly, soldier, bridge; *Y*—yellow, onion.

Blends: *TW*—twenty, between; *DW*—dwarf; *BL*—black, bubble; *CL*—clown, declare; *FL*—flag, snowflake; *GL*—glass; *PL*—please, airplane; *SL*—slim, asleep; *SPL*—split, splashed; *-DL*—cradle; *-TL*—turtle; *-ZL*—puzzle; *BR*—bring, umbrella; *CR*—cry, across; *DR*—drop, children; *FR*—friend, afraid; *GR*—grandma, angry; *PR*—prize, surprise; *SCR*—screw, describe; *SHR*—shrub; *SPR*—spring; *STR*—string, destroy; *TR*—trip, country; *THR*—thread, three; *SK*—school, asking, desk; *SM*—smell, smoke; *SN*—snow, sneak; *SP*—spool, whisper, clasp; *ST*—stop, upstairs, nest; *SW*—swing, swim; *FS*—laughs; *-LS*—else; *NS*—once, bounce; *-PS*—cups, pups; *-TS*—cats, puts; *-STS*—vests, tests; *-THS*—months; *-BZ*—tubs, bibs; *-DZ*—birds, reads; *-LZ*—girls, balls; *-MZ*—drums, homes; *-NZ*—pans, runs, rains; *-NGZ*—songs, rings; *-THZ*—clothes, breathes; *-VZ*—lives, moves; *-LK*—milk, milking, silk; *KW*—queen, require; *SKW*—squirrel; *-KS*—packs, except; *-GZ*—eggs, rugs; *-NG*—sing, hang, wrong.

Vowels: *i*—eat, meat, tree; *ɪ*—it, pig; *ɛ*—egg, bread; *ɛə*—bear, pear; *æ*—at, cat; *ʌ*—up, cup; *ə*—turkey, mother; *ə*—away, banana; *u*—moon, shoe; *ʊ*—book, cooky; *ɔ*—all; *a*—arm, star; *eɪ*—age, cake, day; *aɪ*—ice, kite, pie; *oʊ*—old, boat, snow; *aʊ*—owl, house, cow; *ɔɪ*—oil, noise, boy.

Reading Sentences

Lip Sounds: 1. *P*—The pig ate his supper with the sheep. 2. *B*—The baby robin is in the tub. 3. *M*—The man hammered his thumb. 4. *WH*—Why is the wheel off? 5. *W*—We found a wagon. 6. *F*—The farmer drank coffee with his wife. 7. *V*—His vest is over by the stove.

Tongue-Tip Sounds: 1. *TH* (*voiceless*)—I think the baby needs a birthday bath. 2. *TH* (*voiced*)—The baby's mother will bathe him. 3. *T*—Take the pretty coat to her. 4. *D*—Get the doll ready for bed. 5. *N*—At night through the window we see the moon.

Back-Tongue Sounds: 1. *K*—Come and get your broken kite. 2. *G*—Let's go again and find a frog. 3. *NG*—She sang as she was dancing. 4. *H*—He likes horses.

Complicated Tongue-Tip Sounds: 1. *L*—Let me bring a tulip and an apple. 2. *R*—The rabbit likes four carrots. 3. *S*—We saw a seesaw on the grass. 4. *Z*—The zoo is the home for bears. 5. *SH*—She washes every dish. 6. *ZH*—It is a pleasure to have a treasure hunt. 7. *CH*—The child went to the kitchen for a peach. 8. *J*—Jack saw a pigeon under the bridge. 9. *Y*—Your dog ran into the barnyard.

Blends: 1. *TW*—The twin stood between the others. 2. *DW*—The dwarf is a little man. 3. *BL*—He blew a bubble from a black pipe. 4. *CL*—The clown climbed a tree to declare he was king. 5. *FL*—The flag flew in the snowflakes. 6. *GL*—He broke the big glass. 7. *PL*—Please let me have an airplane ride. 8. *SL*—The slim little boy fell asleep. 9. *SPL*—I will splash some water on you. 10. *-DL*—Put the baby in the cradle. 11. *-TL*—See the little turtle. 12. *-ZL*—I like a puzzle. 13. *BR*—Bring me a brown umbrella. 14. *CR*—You could hear him cry across the room. 15. *DR*—The children dropped their balls. 16. *FR*—My friend is afraid of the dark. 17. *GR*—Grandma was angry with me. 18. *PR*—Won't the prize surprise her? 19. *SCR*—The screw is described in the book. 20. *SHR*—There is a shrub by our barn. 21. *SPR*—Spring is coming. 22. *STR*—The string has been destroyed. 23. *TR*—A trip to the country will be nice. 24. *THR*—She has three spools of thread. 25. *SK*—I am asking for a new desk at school. 26. *SM*—Do you smell smoke? 27. *SN*—Let's sneak out and play in the snow. 28. *SP*—They whisper about the lost spool. 29. *ST*—Stop upstairs and see the robin's nest. 30. *SW*—We will swim over to the dock. 31. *-FS*—She laughs at all the jokes. 32. *-LS*—Give me something else. 33. *NS*—You can bounce my ball once. 34. *-PS*—The little pups can drink out of cups. 35. *-TS*—She puts the cats to bed in the barn. 36. *-STS*—He slipped the tests in one of his father's vests. 37. *-THS*—It took him two months to read the book. 38. *-BZ*—Mother washed the bibs in the tubs. 39. *-DZ*—He reads about birds every day. 40. *-LZ*—The girls took our balls

away. 41. -MZ—They have drums in all the children's homes. 42. -NZ—The water runs over the pans when it rains. 43. -NGZ—Teacher rings the bell for us to sing more songs. 44. -THZ—I have some new clothes. 45. -VZ—The fish lives and moves in water. 46. -LK—Don't wear a silk dress when you are milking a cow. 47. KW—The queen requires that we obey her. 48. SKW—That squirrel has a bushy tail. 49. -KS—Bring all the packs except one. 50. -GZ—Mary dropped the eggs on the rugs. 51. -NG—We all sang the wrong song.

Vowels: 1. i—The dog can eat his meat under the tree. 2. ɪ—give the rest of it to the pig. 3. e—Let's eat an egg with the bread. 4. ɛə—That bear went up our pear tree. 5. æ—Don't throw a tin can at the cat. 6. ʌ—Take the cup up from the table. 7. ə—Mother put the turkey on the platter. 8. ɔ—Throw away that banana skin. 9. u—Can you look in the moon and see a shoe? 10. ʊ—I like to eat a cooky when I read a book. 11. ɔ—All of us like corn. 12. ɑ—Point your arm up at the biggest star. 13. ex—At the age of ten I will have a cake on my birthday. 14. aɪ—If the ice doesn't freeze over night, I will make you a pie. 15. ou—The old boat was lost in the snow. 16. au—The owl hooted from the house and the cow was afraid. 17. ɔɪ—The oil lamp made so much noise that the boy couldn't sleep.

The following passage may be used for a quick survey of the student's ability to produce correct speech sounds. It includes all of the speech sounds, and may either be read by the student or be repeated phrase by phrase after the examiner.

My Grandfather

You wished to know all about my grandfather. Well, he is nearly ninety-three years old; he dresses himself in an ancient black frock-coat, usually minus several buttons; yet he still thinks as swiftly as ever. A long, flowing beard clings to his chin, giving those who observe him a pronounced feeling of the utmost respect. When he speaks, his voice is just a bit cracked and quivers a trifle. Twice each day he plays skillfully and with zest upon our

small organ. Except in the winter when the ooze or snow or ice prevents, he slowly takes a short walk in the open air each day. We have often urged him to walk more and smoke less, but he always answers, "Banana oil!" Grandfather likes to be modern in his language.

Phonation

Since voice disorders are classified according to defective pitch, intensity, and voice quality, the speech tests provide a method of analyzing each of these characteristics of phonation. For these tests, the speech correctionist needs a well-trained ear and experience enough to differentiate abnormal performance from the wide normal range of phonatory deviations. Many of these tests are very subjective and unreliable if administered by an untrained individual, but in the absence of the expensive, though time-consuming, laboratory apparatus which can give accurate measures, they are very useful in diagnosis and direction of treatment.

Voice Tests

Pitch

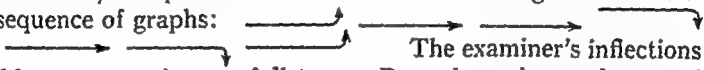
1. *Ability to discriminate pitch.* This may be tested by whistling pairs of notes at low, middle, and high pitches, and requesting the subject to tell whether the first is higher or lower than the second. Use ten pairs of notes at each of the pitch levels, using a random order. The same test can be given by humming the notes. Do not let the subject watch you, and keep the tones exactly two semitones apart. Record the number of errors at each pitch level. Students should practice giving this test under supervision until they are able to give adequate stimuli.

2. *Ability to produce a given pitch.* This may be tested by humming the nasal *m* at a low, middle, and high pitch. After each stimulus, the subject is required to attempt to duplicate it with his humming. Use different notes at each pitch level and continue the hum for at least five seconds. Score as an error any performance which does not come within a semitone of the stimulus or its octave, but note any tendency to produce a harmonic such as a musical fifth.

3. *Ability to carry a tune in unison or alone.* Tunes chosen should be simple and familiar. Use the unison test first. Use the same tune for both.

4. *Ability to follow inflections.* In this test the student is provided with a pencil and paper, and is shown the following graphs of inflection as they are phonated and drawn by the examiner on the vowel *a*:

He is then asked to follow with his pencil a new series given by the examiner, who phonates the inflections according to the following sequence of graphs:

 The examiner's inflections should not range above a full tone. Record number and type of error.

5. *Normality of inflections in speech.* Use phrases or sentences which ask questions, make statements, give commands, indicate surprise, and express disgust, and have the subject repeat them after the examiner. Some examples are: *What's that noise? I liked that movie. You get out of here! What a BIG fish! Oh, I'm sick of this lousy place.* Record marked differences from your own inflections.

6. *Relation between pitch and stress.* Using the sentences in the preceding paragraph, notice whether stress changes are used instead of pitch changes. Underline certain words in sentences and ask subject to emphasize them. Note whether any pitch changes occur. Ask subject to phonate some vowel several times, alternating stressed and relaxed production. Note whether stressed notes are higher in pitch.

7. *Determination of pitch range.* Hum a middle-pitched note as a model for the case to imitate. Then gradually hum down the scale until the case cannot phonate at any lower pitch. Do this several times and note the place at which the individual begins to strain and falter. Locate this note on a piano or pitch pipe. Then beginning with the same original note, hum up the scale, until the voice breaks into the falsetto. Instruct the subject not to use the falsetto if possible. Locate the highest note accomplished without straining or falsetto. The difference between highest and lowest notes may be called the pitch range. If the falsetto keeps breaking in, determine the highest note of its range.

The importance of pitch-range tests is that they help us determine whether the speech defective is using a habitual pitch which is too near the bottom or top of his pitch range. If this is the case, intensity and quality defects may result. Moreover, the

optimal or natural pitch at which the subject is most effective is usually located at a point a few semitones above the lowest third of the regular pitch range. If the falsetto is included, the natural pitch is usually located at about the twenty-fifth percentile of the total pitch range.

8. *Determination of habitual pitch.* This is much more difficult for the untrained or inexperienced examiner to determine, since it involves the disregard of inflections and a process of mental averaging of the pitch changes which exist in propositional speech. Nevertheless, the trained ear can spot the average pitch of another individual's voice with amazing accuracy. The subject is asked to repeat over and over, ten times or more, the sentence: *Now is the time for all good men to come to the aid of the party.* Disregarding the first and last words, the examiner hums softly up and down the scale until he finds his voice synchronizing with the pitch of the subject's voice. Continuing to hum this pitch, he goes to the piano and finds its notation, which he records. Through similar technique it is also possible to determine the extent of habitual pitch range used by the subject. The reference by Root is recommended if supplementary information is desired.

9. *Determination of natural pitch.* Ask the subject to close his eyes, to begin with a low pitch, and to hum slowly and continuously up the scale, attempting to keep the intensity constant. The observer will note a certain pitch at which the intensity swells. Hum this pitch until it can be identified on the piano and recorded. Repeat the process while humming a descending scale. Give three ascending and three descending trials, and consider the place at which these pitches seem to cluster as the natural pitch. A range of three or four semitones about this note may be considered as optimal for performance. The natural pitch level may also be determined from the pitch range as described in test seven of this section.

10. *Effect of special influences.* By controlling the testing situation in the appropriate manner, study the effect upon the subject's habitual pitch of the following variables: change in quality (have subject speak gutturally, nasally, etc.); changes in intensity (very loud and very quiet speech); relaxation; distraction; imitation of another's speech.

Intensity tests. Although a few intensity voice cases whose disorder is due to too loud a voice are referred to the

speech correctionist, most of these are due to defective hearing. The majority of defective voice intensity cases are of pathological or neurotic origin, or are due to overstrain and overuse. A laryngoscopic examination is usually required, and when the disorder is complicated by excessive breathiness an oto-laryngologist should be consulted. In cases of aphonia, or total loss of voice, the services of this specialist, and occasionally those of a psychiatrist, are recommended. Examination of the exterior of the throat will indicate whether a grossly malformed or underdeveloped larynx may be responsible. Since these cases are usually consistent throughout their speech in their weak intensity, no speech-sound analysis is necessary, except an aural scrutiny of the patient's speech to determine whether the vowels are being normally prolonged or the consonants sufficiently stressed.

1. *Maximum duration.* The subject is required to take three deep breaths and then phonate a front, middle, and back vowel. Each is held as long as possible, and the time recorded. Normal individuals should be able to hold any of these vowels for at least 15 seconds without difficulty. The vowels *i*, *a*, and *u* may be used, and the series should be given twice if the subject fails the first time.

2. *Breath economy.* The subject should be given a passage to read. Note the first words of sentences to determine whether the subject exhales abnormally prior to speech attempt. Also note the number of inhalations per fifty words of jumbled material, or in reading backwards. Over eight inhalations per fifty words is definitely abnormal. It is wise to make a breathing record if possible, noting attack-exhalation, phonation on residual air, shallow breathing, and dysintegrations between thorax and abdomen. These can also be detected by the trained observer without such apparatus. Note also whether clavicular breathing is used.

3. *Muscular tension.* Firm pressure by the experimenter's fingers on both sides of the thyroid cartilage will discover hyper- or hypo-tonicity of the laryngeal musculature.

4. *Effect of special influences.* By controlling the testing situation in the appropriate manner, the examiner can study the

effect of the following conditions on the habitual intensity: strong clinical demand for more intensity; pitch change; change in voice quality and presence of masking noise; distraction; relaxation; strong physical effort made simultaneously with speech attempt; expression of rage or disgust. It is also wise to determine if the subject can discard speech inhibitions by asking him, for example, to call a dog from across the street in the manner illustrated by the examiner. Determine also whether there are certain speech situations in which the person's voice is adequate in intensity.

Tests for voice quality. Disorders of voice quality, with the exceptions of nasality and denasality, have always been difficult to classify because of multidimensional nature of timbre. Pitch and intensity are fairly linear functions. One hears high and low or loud and weak tones. But voice quality or timbre is based upon a large number of overtones whose contribution to the auditory sensation depends upon their number, and the frequency and intensity of each. Hence there is no clear-cut variant which we can perceive. The terms we use to designate voice quality are as numerous as adjectives. Most of them are confused and inaccurate. Few of them mean the same to one person as to another. Nevertheless, within limits, such a classification is of some value and is included in the examinations given below. A laryngoscopic examination is usually needed, and a phonographic recording may be recommended. The amount of tension in the laryngeal, pharyngeal, and velar musculature should be noted. The natural and habitual pitches should be recorded to determine if pitch is a factor. The following items should also be administered.

1. Check adjectives which best describe defective voice quality: hoarse, husky, strident, guttural, breathy, throaty, noisy, pectoral, nasal, denasal.
2. An auditory analysis should be made to determine which vowels are most defective. All vowels are seldom equally bad, and usually only a few need remedial work. The teacher should begin by having the subject read until the teacher can be certain

to identify the peculiar timbre responsible for the voice disorder. Then have the subject prolong each of the isolated vowels for about five seconds. The examiner checks those which are obviously abnormal, making a recheck to determine which of the vowels are most defective. After completing this, the examiner should go through the articulation test sentences and words which deal with the vowels, underlining all those most defective. Note also whether the defective quality exists all through the prolonged vowel or merely at its initiation, and whether or not it seems to be affected by the consonants which precede and follow it.

3. A similar analysis should be made for nasality disorders. With these, one can use a cold mirror held horizontally and placed with the mirror side up beneath the nostrils, but above the mouth. If clouding occurs on the mirror, the vowel has been nasalized. The same test may be used by placing the fingers on each side of the bridge of the nose and determining nasality by the vibration. When using the words of the articulation test, be sure to substitute others for those containing the *m*, *n*, and *ng* sounds. Note whether nasality is produced on certain vowels when no nasal air is discharged.

4. Once the two or three most defective sounds have been discovered, make a phonetic placement analysis to determine position of lips, jaws, tongue, and velum. Insist upon other methods of producing the same vowel (with tongue and lips in different positions), and note variations in quality.

5. Study the effect of pitch change on voice quality. Use isolated vowels at many different pitch levels, and also use continuous speech.

6. Repeat the preceding test, using variations in intensity.

7. Study the effect of relaxation, both general and specific, on voice quality. Use the vocalized yawn for the worst vowels.

8. Determine the quality of whispered vowels. Is it better than the phonated ones? If so, try to make gradual transition from whisper through stage whisper to phonation, without letting peculiarity come in.

9. Study the effect of distraction and imitation of other voices.

Disorders of Symbolic Formulation and Expression

Tests included in this division are used in cases of delayed speech, in cases of congenital deafness which present occa-

sional signs of adequate acuity, and in cases which show peculiar auditory lapses, word-substitutions or omissions, peculiar syntax, and associated reading, writing, or spelling difficulties. They are also used in cases specifically diagnosed as aphasics or high-frequency deafness. The function of these tests is to clarify the etiology and nature of the disorder, to indicate leads for therapy, and to give some idea as to prognosis. While such cases are fairly rare, they are met occasionally in most practice of speech correction.

Auditory tests. All of these cases should be given audiometer tests, using a special technique described in Ewing's *Aphasia in Children*. Many children have been diagnosed as aphasic and congenitally deaf when they have merely possessed poor acuity in the higher sound-frequency range. Such children frequently show little tendency to respond to sounds, probably because the distortions heard produced confusion. Hence such children come to regard sound stimuli as unimportant. Certain tests and observations of behavior help to determine if high-frequency deafness may be a factor. Suddenly sounding a loud noise behind the unsuspecting child's head will dilate the pupils. Be sure that your sound stimuli do not affect the child through floor or chair vibration. It is also advisable to decide whether or not the child can hear by the conditioning method. Blindfold the child, and at irregular times sound loud notes, in the low, middle, and high pitch levels, following each note by tapping the head sharply with the forefinger. Occasionally omit the tap after the note and observe whether or not the child flinches. Note whether his inflections are normal or absent. Does laughter show normal pitch changes? Has the child ever shown any occasional signs of hearing? Be sure that the occasions cited by the parents are not merely examples of contact vibration. Note, in the case history, the early speech of the child. Did he go

through a babbling period? Did he ever practice inflections? Did he ever repeat one syllable or double syllable? Did he ever show any association of vocalization with meaning? Although even the congenitally deaf child goes through the early babbling period, he seldom shows any tendency toward inflection or association.

Tests for aphasia. While the function of the speech correctionist is not to make the final diagnosis but merely to refer suspected cases to the physician, he should know enough to recognize such cases and to do remedial work with them as soon as the injury has been found to be no longer progressive in its consequences. The case history should be carefully examined for evidences of birth injury, diseases affecting the central nervous system, accidents and shocks to the head, peculiarities of locomotion development and coördination, anomalies of speech development, and peculiarities in reading, writing, and spelling. Special tests for aphasia will be found in *Speech Pathology*, by Travis, and in *Aphasia*, by Weisenberg and McBride, and these should be used if a complete analysis is required. The following items, however, will be helpful in diagnosis.

The suspected aphasic should:

1. Write from dictation a complex sentence of about ten words.
2. Record all errors in reading orally a paragraph from a standard reading test.
3. Repeat after examiner, phrase by phrase, several paragraphs.
4. Perform simple addition and subtraction, mentally and in writing.
5. Set clock to time designated by examiner.
6. Point to, and name, colors and familiar objects.

The examiner should:

1. Note the frequency of slips of the tongue and the use of peculiar word choices.
2. Note if, under strong emotion, the person uttered words that have never been spoken otherwise.

3. Administer various performance tests, such as the Kohs blocks and Porteus mazes.

4. Note the presence of speech reversals, such as "alpe" for "apple" or "got-for" for "forgot."

5. Ask the parents and teachers for examples of peculiar phenomena appearing in speaking, memory, reading, writing, arithmetic, and spelling.

Examinations for Stuttering

Before the actual therapy for the stutterer is initiated, the clinician must secure a complete picture of the symptoms which the stutterer manifests, the manner in which those symptoms developed, the cues which set off the stuttering, the relationship of certain types of situations to the occurrence and relative severity of the stuttering blocks, situation and word fears, and his attitude toward the defect.

Frequency and duration of stuttering block. Some stutterers experience only a few mild blocks; others have many severe ones. Often an entirely different therapeutical approach must be made to a stutterer with infrequent blocks from that to one stuttering on one word in every three or four. To test both the frequency and the duration of the stuttering block, give the stutterer a passage (such as "My Grandfather") to read. Take a copy of the identical reading material yourself, and as he reads, check all of the blocks in the following manner. Encircle the words on which a long, severe block occurs, underline the words on which he has a block of average length, and make a cross through the words on which he has only a very short spasm. Then ask him to paraphrase the paragraph and count the spasms, classifying them as to duration. Finally, ask him to reread the same paragraph, and check the words again. (This technique will be simplified if the second recording is made with a pencil of a different color.) In a mild stutterer, the second reading will usually show a marked decrease in the number of spasms. From this test, the clinician will be able to estimate the frequency and the duration of the stuttering block. Both frequency and duration should be noted on the stutterer's report as being below average, average, or above average.

The secondary symptoms. All stutterers who have passed the primary stage of the disorder and have become aware of their speech difference have employed certain techniques or tricks to hide and minimize that difference. Before any corrective work is initiated, the speech correctionist must find out what these devices are. Adult stutterers of average intelligence may be given the stuttering history to fill out. In it, both the presence of these secondary symptoms and their development is recorded. The clinician must make an additional check on the symptoms, however, and note evidences of them in the stutterer's ordinary speech. The general classes of symptoms which must be checked are: symptoms of avoidance, postponement, "starters," anti-expectancy, release, and the postspasm reactions. These can be underlined on a stuttering history blank as they are noticed, or written on a special blank provided for that purpose. Special notation should be made of those symptoms which appear the most frequently.

1. *Symptoms of avoidance.* Some of the means by which a stutterer may avoid a feared word are: giving up the speech attempt altogether, substituting a different word for the one feared, changing the order of the words (circumlocution), waiting for help on the word, pretending to think, and using very condensed or telegrammic speech.

2. *Symptoms of postponement.* Stutterers often postpone the attempt on a feared word either because their fear is so great that they feel there is no possibility that they can say it at the moment, or because they feel that they may say it without any difficulty if they wait for a few seconds. Some of the techniques which they use to accomplish such a delay are: pausing, using accessory vocalization (such as saying "a . . . a . . . a . . .," "why," or "er" before a word), repeating preceding words, repeating preceding sounds, prolonging the last part of the preceding word, repeating entire phrases preceding the feared word, or slowing down the rate at which the preceding words are spoken. Here the stutterer is avoiding the feared word in time, though he does not intend to avoid it completely.

3. *Symptoms of starting.* Stutterers sometimes feel that most of their difficulty comes when they are attempting to start a word and that, if they can just start it some way, they will be able to say it successfully. Some of the more common types of these starting devices are: use of a starting word, sound, or phrase (such as "um," "well," or "you see"), use of some particular

stereotyped movement just before the word is attempted (such as a body jerk, throat clearing, swallowing, or eye blink), repetition of preceding phrase at increased rate (sometimes called "getting a running start"), suddenly changed pitch of the voice, suddenly changed intensity of the voice, suddenly increased tension, suddenly decreased tension, and use of some movement to time the actual moment of speech attempt (and not before that moment, as was suggested in the above technique), such as tapping the foot, blinking the eyes, or jerking the head.

4. *Symptoms of anti-expectancy.* The relationship of fear to stuttering is so great that stutterers often feel that, if they could destroy the fear of approaching words, they would be able to say them without any difficulty. The three major ways of doing this are: using a kind of speech in which no word stands out enough to be feared, filling the mind with other things so that the expectancy of stuttering is kept out (distraction), and assuming an evident attitude of self-confidence. In the first-mentioned class, we find these types of devices: use of a monotone, slow and deliberate speech, singsong speech, very rapid speech, and slurred speech. In the second class, we find: unnatural speech which demands strict attention, voluntary movements of the body which serve as a distraction, visualization of words, a sequence of breathing or vocalization patterns, and overattentiveness to phonetic drill positions. In the third class, among those devices which are used to attain self-confidence, we may see: assumption of aggressive, belligerent, or clowning behavior, whispered rehearsal, compensatory behavior of various kinds, and the use of coughing, or some such obvious activity, to prove to the stutterer that he is still able to control his speech organs.

5. *Symptoms of release.* After a stutterer finds himself in a block, he does certain things to release it. Some of these more commonly used techniques of release are: to stop immediately and try again on the same word, to pause when the block is felt and then to finish the rest of the word, to stop and postpone a new attempt for some time, to stop and wait until almost all breath is gone and then to say the word on residual air, to stop and avoid the word entirely, to stop and use some distraction, to stop and assume a confident behavior (to change the attitude), to continue the word and increase the tension, to continue the word and change the pitch of the voice, and to change the pattern of breathing by speaking the rest of the word on inhalation.

Sequences. While discovering what secondary symptoms are manifested, notations must be made of the sequences in which these symptoms occur. Does the stutterer have a stereotyped pattern which he follows? Does he always pause first before a feared word, then start it by swallowing? Or does he usually postpone the attempt on a feared word by repeating the preceding word, and if that fails, by repeating the whole preceding phrase? Does he try to release a spasm first by forcing, and if that fails, does he attempt a release through stopping and starting again? Most stutterers follow some definite sequence in the secondary symptoms which they utilize in the attempt to speak. Sometimes a sequence will contain four or five secondary reactions. Many of these patterns have become very strong through their continued use, and the definite sequence must be recognized before any work can be done upon its disintegration.

The clinician must familiarize himself with evidences of these secondary symptoms in the speech of those stutterers whom he examines. *It is also desirable to find out what methods for the alleviation or cure of the speech defect have been suggested to the stutterer and have been tried subsequently by him.* (Examples of such suggested methods are: talking slowly, swinging the arm when talking, taking a deep breath before feared words, using monotone, stopping and starting the speech attempt again, and so on.) There is often a positive relationship between these tricks and the spasm pattern which the stutterer has developed, so the development of the reactions must be clarified for him.

Cues—specific expectancy. After a symptom diagnosis has been made of the stutterer, one must discover, through questioning the individual, what the cues are which set off the actual stuttering block. For every stutterer who is aware of his speech difference, there are certain features of communicative material which stand out as being invested with stuttering threat. These words, or parts of words, which stand out are the centers and subcenters of the configuration of communication. Some of the stuttering landmarks in a sentence upon which word fear is experienced are: the first words in a sentence, the last words in a sentence, the unfamiliar word, the word which is difficult to pronounce, and the inexact word. Often the accented syllables also serve as cues which arouse specific fear of a certain part of a word. In addition to these cues which are dependent upon the actual content of the communicative material, there are the more

artificial cues which arise from the stuttering experience of the individual. If special sounds or words have been stuttered upon sufficiently enough and vividly enough in the past to leave an indelible impression upon the stutterer, they, too, may subsequently set off specific fear of stuttering. The clinician must find which of these cues are responsible for precipitating specific fears in the stutterer.

General expectancy. In addition to discovering the cues which set off specific expectancy in the stutterer, the situation, or general fears, must be found. Does the stutterer have blocks when talking or reading aloud when alone? Does he stutter when he sings or whispers? Which people in the home situation are most difficult to talk to and why? What school situations are most difficult? Are there any playground or business situations which are greatly feared? What situations does he avoid? Does he avoid the use of the telephone? What situations does he recall as having been very unpleasant because of his stuttering?

Prior to entering a feared situation, does he rehearse what he is going to say or does he visualize himself stuttering? How does he attempt to change a feared speech situation so that he will have less trouble? Does he brood over speech failures? Is his characteristic reaction to a feared situation one of retreat or one of attack? Is he prone to have reactions of absolute panic? Question the stutterer as to each of the above.

Request the stutterer to give examples of any of the following penalties which have been inflicted upon him. Which are most common?

The penalties are of three types: social, sexual, and economic. All of these penalties are expressed through audience behavior. Some of the most common audience reactions which fall under the category of social penalties are:

1. Attack by, or rejection from, social group;
2. Underestimation of stutterer's intelligence;
3. Expression of dislike, discomfort, anger, irritation, disgust, or impatience;
4. Expression of amusement;
5. Interruption, anticipation, or thwarting of communication;
6. Ridicule;
7. Pity and tolerance.

The most common sexual penalty is rejection of companionship by members of the opposite sex.

Economic penalties which are interpreted from audience reactions are:

1. Peremptory rejection of application for employment;
2. Unwillingness to place stutterer in a position of responsibility;
3. Overprotection;
4. Demand for speech improvement under threat of losing economic security;
5. Impatience with communication limitation.

Attitude toward stuttering. After the specific and general fears have been determined, the clinician must discover the general attitude of the stutterer toward his speech handicap. Does he obviously suffer whenever he has a spasm? Is he able to watch one of his blocks? Does he accept his defect optimistically or does he have a pessimistic view of life because of it? The following simple tests may be given, during which the tester notes the reaction of the stutterer. 1. Ask the stutterer to imitate one of his blocks, looking in the mirror as he does it. 2. Ask the stutterer to relate some incident concerning his speech, and see whether or not he is able to look at you during a block. 3. Bring a stranger into the room, and see whether or not the stutterer will speak to him when asked a question. Did he look at the stranger? In addition to these observations, it is well to ask the individual to answer a few such questions (from Johnson's test of attitude toward stuttering) as: 1. Do you think there is any advantage in being a stutterer? 2. Does stuttering make it difficult or embarrassing for you to buy something in a store? 3. Is the average person as friendly with a stutterer as he is with a normal speaker? 4. Does stuttering make it difficult for you to keep friends? 5. Are you ashamed of your stuttering? 6. Does your stuttering make life seem worthless to you? 7. Would you rather be blind than stutter? (Ask same question substituting deaf, fat, having a large birthmark on face, and feeble-minded for first handicap.) The obvious reactions of the stutterer to these questions, combined with his reactions to the other tests and his blocks in general, will give quite an adequate picture of his attitude toward his speech difference.

General observations. As a final test, it is well to give the stutterer a few simple situations in which the examiner will note the general attitude, and both the number and relative severity of

his spasms. Suggested situations are: have him make a telephone call; ask him to read a paragraph aloud to you and then paraphrase it for you; have him ask a question of some stranger; ask him to introduce himself to someone who comes in; have him carry on a conversation with you while watching himself in a mirror; and ask him to explain or describe some simple process to you. In such situations, you may get a more adequate sample of his actual spasms than you will have obtained before in the brief answers which he has given to questions asked in the preceding examinations.

ARTICULATORY TEST REPORT

(*Note:* Substitutions are recorded thus: *th/s*. Omissions and additions thus: *-l* or *+w*. Follow error by letter *I*, *M*, or *F* to indicate position of error in word.)

	<i>Sound Substitutions</i>	<i>Omissions and Additions</i>	<i>Distortions</i>
Repetition from model:			
Reading:			
Spontaneous production:			
Inability to discriminate:			
Words in which sound is used correctly:			

Which of the following factors seem to be important in this case:

manner of articulation:
 frequency characteristics:
 visibility of performance:
 developmental order:
 nasality:
 sonant and surd confusion:
 speech reversals:
 assimilation:
 reduplication:

PHONATION TEST REPORT

Pitch:

1. Discrimination errors: high-pitch level.....low-pitch level.....middle-pitch level.....
2. Errors in producing given pitch: high.....low.....middle.....tendency toward harmonic error.....
3. Ability to carry tune: unison.....solo.....tune used.....
4. Ability to follow inflections: number or errors.....type.....
5. Normality of speech inflections: Sentence in which error occurred.
6. Relation between pitch and stress: Did emphasis or stress cause higher pitches? always.....occasionally.....never.....
7. Average pitch (use musical notation).....
8. Habitual pitch.....
9. Natural or optimal pitch.....
10. Special influences. Underline which of the following tend to alter habitual pitch: change in quality, intensity, distraction, relaxation, imitation.

Intensity:

1. Maximum duration in seconds: vowel *ee* (i)....., *oo* (u).....
2. Typical breathing abnormality.....
 Number of inhalations per 50 words read.....
3. Muscular tension: excessive.....average.....below average.....
4. Special influences. Underline which of the following tend to change habitual intensity: strong clinical demand, masking

SPEECH TESTS

noise, distraction, relaxation, chanting, simultaneous strong contraction of limbs, rage, disgust.

5. Effect of altering speech situation:

Quality:

1. Underline appropriate adjective: hoarse, husky, strident, guttural, breathy, throaty, noisy, pectoral, nasal, denasal.

2. Which vowels are most defective? least defective?

3. Does defective quality exist throughout defective vowel or only at its initiation?

4. Phonetic placement differences in prolongation of defective vowel: lips jaws tongue velum
pharynx

5. Effect upon worst vowels of the following influences (underline): distraction, yawning or sighing, changes in intensity, whispering, imitation.

STUTTERING TEST REPORT

1. Frequency and duration:

First reading:	long blocks	average	short
Paraphrase:	long blocks	average	short
Second reading:	long blocks	average	short

2. Primary symptoms:

Repetitions—average number of words

Prolongations—approximate duration

Conditions under which they occur

3. Secondary symptoms. Describe type and note frequency.

Expectancy symptoms:

Avoidance:

Postponement:

Starters:

Anti-expectancy:

Release symptoms:

4. Characteristic sequences. Describe in terms of expectancy and release symptoms.

5. Cues setting off fear of words:

6. Cues setting off fear of situations:

7. Reaction to occurrence of symptoms:

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Treatment of the Child Who Has Not Learned To Talk

Types of delayed speech. Many parents and elementary teachers bring children to the speech correctionist with the complaint that these children have not learned to talk or cannot learn to talk. Indeed, some of the children have no speech, relying upon grunts and gestures for all communication. Others seem to have considerable vocalization, but it is so distorted and bizarre that the parents are convinced the child speaks a language of his own. Still others present a history of early speech with a loss of the ability to speak after an illness, accident, or emotional shock. All of these disorders are usually classified under the term "delayed speech."

Causes of delayed speech. In the treatment of delayed speech it is very important that a very careful and thorough study of the child's development and environment be made. Every child will learn to talk unless some important factor is preventing speech acquisition. In no other speech disorder is it so necessary to find and eliminate the cause, and the teacher should leave untapped no source of information which might lead to a knowledge of the origin of the child's lack of intelligible speech.

The common causes of delayed speech, all of which should be considered in exploring the child's history, are: low mentality, deafness, poor coördinations due to disease

or paralysis, prolonged illness (especially in the first two years of life), lack of necessity or motivation for speech, improper teaching methods used by parents, shift of handedness or confused hand preference, necessity for learning two or more languages simultaneously, shock during the act of speaking, emotional conflicts, and aphasia. Each of these will be discussed in turn.

Low intelligence. The teacher must be careful in deciding that the cause of the child's delayed speech is low intelligence. Indeed, the reverse relationship often seems to be the case, since several authorities claim that children gain from ten to thirty points in I.Q. as the result of having been taught to talk. The Binet examinations are especially dependent upon the acquisition of speech, and even many of the performance tests presume a familiar acquaintance with activities that these speechless children would find difficult. Recent studies in the field of intelligence testing have indicated that I.Q.'s can be raised by providing young children with a stimulating environment, and it is easily seen that a child who has no speech responses would not be likely to meet as much stimulation as would the speaking child. Nevertheless, children of low intelligence are generally retarded in speech and must be taught patiently and carefully by means of the special techniques known to the teacher of subnormal children. These children need speech training even more, perhaps, than the usual course of study given them would seem to indicate. Training in the manual and domestic arts should be supplemented by much speech training.

Hearing defects. It is well known that children who are born deaf do not speak unless they are painstakingly taught to do so. It is not so well known that children who have lost their hearing as a result of illness or accident frequently lose intelligible speech to such a degree that many of the speech sounds are never regained. Nor is it well enough

known that there are types of deafness which permit the child to hear certain pitches but not others. So-called regional deafness, of which high-frequency deafness may serve as an example, can produce distortions of speech so peculiar that the child's parents are convinced of a lack of intelligence. Some of these children have often been placed in schools for the totally deaf, although properly designed hearing aids could permit them to attain adequate speech. These children should be referred to an otologist for a thorough examination. An audiometric examination is vitally necessary, and the physician should use some of the newer techniques suited to the responses of young children.

Poor coördination. Although there are certain children who present the picture of precocious speech together with defective or immature coördinations, the majority of children who are definitely retarded in the motor sphere are similarly retarded in speech. The child with St. Vitus Dance (chorea), or the one who has suffered from infantile or spastic paralysis, seldom acquires intelligible speech before four or five years of age. It is usually unwise to do very much speech work with these children before they have acquired some degree of control over the larger movements. Physiotherapy, especially for the paralytics, will improve speech much more than concentrated speech correction in the early years of the child's life.

Illness. Prolonged illness during the first year usually interferes with the babbling and vocal play so necessary to the beginning of speech. The first speech attempts seem to emerge, not from the squalling of hunger, irritation, or pain, but from the noises of relief or contentment. An ill child seldom gets enough of this early speech practice, and since all the speech sounds used later in life are practiced during the babbling period, he usually presents delayed speech. Uninformed parents often fail to realize the importance of this babbling and, feeling that the child should

then be talking, insist upon his learning meaningful words immediately. They should stimulate him to babbling as much as possible. His environment should be one of much vocalization, especially of the repetitive vocal play that many parents coo to their infants. Repetition of syllables immediately after feeding or when the child is content or free from pain will soon provoke a similar response from him. Meaningful purposive speech can be taught later, and the child should be encouraged to talk to his pets and toys, to accompany rhythmic movements with vocalization which is either sung or spoken, and to indulge in all the vocal play he wishes. Even six-year-old children with a history of early illness and delayed speech should be taught to babble.

Lack of motivation. One of the first causes of delayed speech which speech correctionists look for in the child of less than six years of age is that of a lack of motivation. Children will not learn to talk unless they realize the utility of speech. The law of least effort is a rather fundamental determinant of human effort, and, when children can get their wishes fulfilled without employing speech, they never acquire this all-important tool. We adults, who speak so easily, often fail to realize that our vocal skills are not mastered without some difficulty. Children will avoid this difficulty if they can, and some parents seem to help them in this avoidance. Some mothers become so skillful at anticipating their child's every wish that the performance astounds the bystander. This appalling situation arises especially when the child is an only child or has been ill a great deal or is handicapped in some way. Excessive overprotection and solicitude can not only delay speech acquisition but often prevent it altogether. The child develops an excellent understanding of the speech of others and frequently develops a gesture language which would do credit to a Charlie Chaplin, but he steadfastly refuses to make any speech attempt of his own.

Often the parent declares that she has tried to get the child to speak but he refuses, and that she does not know what to do. This is usually true, but when the manner of teaching has been examined, it will be found to be sporadic and perfunctory. Only a consistent, patient, and extended program of speech teaching will be effective. This program must follow some such sequence as this: (1) Insist that the child accompany all gestures by some vocalization. This vocalization may be some meaningless vowel. The parent should sound the vowel whenever the child gestures so as to provide the stimulation necessary to produce the child's response. The parent should explain to the child that no wish will be satisfied until he does vocalize, and the parent must maintain this standard for at least a week before giving up. We have never had a failure when this has been done. Usually two or three days are necessary before all gestures are accompanied by vocalization. (2) Once this has been accomplished, select some favorite plaything or favorite food, and demand a modification of the vocalization whenever the child desires the object. For example, if the child wants a ball, he should be told that he must press his lips together firmly before vocalizing, thus producing a sound similar to the *b* sound, in the syllable *ba*. Even if this sound is not exactly the true word for the object, it should be given him with much praise. Only one such "word" should be worked for at a time. If the child refuses the object and turns to others, he should be placed in an empty room where this object is the only toy. No normal child can resist such a program. The word should be reviewed frequently, and much social approval should be given. Pictures of the object can be hidden about the room and games may be invented to show the child the usefulness of naming. Once a word has been mastered, others can be acquired in a similar manner. Monosyllabic words should be used, and as we have said, they need only

approximate the real word. Babbling, echoing, and other speech games will help. Usually, when the child has acquired one or two words, the problem solves itself.

Poor speech standards. Another cause of delayed speech is poor speech standards in the home. This condition is closely related to a lack of motivation, although the latter usually refers more to the substitution of a gesture language than it does to the presence of a primitive vocal language which results from the parental acceptance of distorted speech. Many a child of four and five is brought to the speech correctionist with speech so unintelligible that no one save the mother can understand what the child is trying to say. Twins and children of similar ages often develop a serviceable speech of this sort. One pair of twins who were examined used much vocalization when communicating with each other but used only gestures when speaking to adults. In their primitive vocabulary, the following words seemed to be used consistently: "we-we" (meaning either "I" or "you"); "eee" (any adult); "bam" (ball); "bam-aa" (apple). There were other similar distortions and substitutions. In general, this type of speech consists of the more primitive lip, nasal, and tongue-tip sounds used with the neutral or front vowels. Most of the words are approximations of those used by adults, with the distortions produced by substituting easier sounds for the more difficult ones. Since the parents or associates of these children accept this counterfeit speech, the child has no incentive to improve it.

These poor speech standards are occasionally due to parental baby talk, but more often they are the result of illness or handicap which has made the parent reluctant to put any extra pressure on the child. After the illness, the parents resolve to insist upon good speech, and so they nag and correct and scold the child for a period of days. This procedure seldom produces any great change, because a

strong penalty or pressure which is placed upon any activity as unconscious as speech tends to stamp in the error and to make it more permanent. Moreover, the mere command, "Don't say 'eee,' say 'mama'!" does not show the child how he can make the new coördinations. And again, constant nagging about the child's poor speech will surely arouse an emotional conflict, for not even an adult can watch his speech continually. Therefore, the parents usually give up the attempt and hope that the child will outgrow his poor speech habits.

There are better methods than those suggested in the last paragraph, and they will be discussed in some detail later in this chapter. But it can be emphasized that good speech standards must be built gradually and that the child must be shown how to make the desired words. The parents should concentrate their efforts on not more than five words, and these words should be composed of the easier speech sounds. The child must be taught to make the sounds which comprise these words and should be able to make them at will. This teaching of sounds should be confined to a few situations or speech periods which are part of the child's daily routine. Only good-natured and humorously vivid penalties should be used, and rewards should be stressed. When the child is first able to make the desired word, corrections should still be confined to these nucleus speech periods. But as these words and nucleus situations become completely mastered, the requirements may be extended until all words and all situations must conform to the adequate speech standards.

Improper methods used in teaching the child to talk. An authority on child care once said that children learn to speak, not because of parental teaching, but in spite of it. The average child certainly does seem to exhibit a remarkable ability to acquire speech when the teaching is so poor that it hardly merits the name. All that most young par-

ents know of the teaching of talking is that they should hold out an object and repeat its name over and over. Meanwhile, they hope that the miracle will happen, and it usually does. But some children need more skillful teaching and do not acquire speech until such teaching is forthcoming. Some of the common errors made by parents in the teaching of talking are: stimulation at the wrong time, too much or too little stimulation, the wrong kind of stimulation, disregard of the need for motivation, and, finally, improper use of association to provide meanings.

Some parents begin to try to get the child to imitate them as early as the third and fourth months, whereas no attempts should be made until about the seventh month, and imitation of motor behavior should always precede imitation of speech. Stimulation at a time when the child has not reached the proper level of maturation is not only useless but also actually harmful, since it merely reduces the child's interest in the stimulation. Other parents will wake the child out of a deep slumber or will interrupt such prepotent activities as feeding to ask him to say "bye-bye." The first teaching of talking should be confined to the child's vocal play periods.

Even intelligent parents frequently overstimulate or understimulate the child and use improper types of stimulation. Children who are neglected, even in the interests of modern child education, will be delayed in their speech. Then, too, children who are bombarded from every side by crowing parents, by masses of endearing or admiring verbiage, can hardly be expected to respond selectively. Parents who have heard of the evils of using baby talk (which certainly is an evil at a later stage of speech development) confine their stimulation to such words as *bicycle*, *mother*, and *nurse*, and they occasionally rebuke their unlucky offspring for such achievements as "ba" for "ball." As we have seen, the first stimulation should be the imitation of

the child's own vocal play; and the next should be monosyllables or double syllables which the child has practiced previously. Later on, after the child has learned to enjoy and to use speech and shows eagerness for new names, the true di-syllables (such as *water*) can be used.

Many parents, made unintelligent by the presence of a new object for their self-love, seek to anticipate their child's every wish. They rush to give the ball to the child if he so much as looks at it. Were they wise, they would move it a little closer and provoke some speech attempt, and use the situation for the teaching of talking. Probably the most frequent functional cause of delayed speech is this parental overeagerness. Children won't talk unless they profit from the attempt. Speech is a tool, and if it is not needed, it will not be used. Parents should be very careful to prevent the formation of such a state of affairs, for only by careful and systematic retraining can it be broken down.

Finally, parents make the mistake of tearing down associations as fast as they are built. Instead of concentrating their teaching on a few simple words and their associated objects, they overwhelm the child with synonyms and adjectives and terms of endearment, a hodgepodge of stimulation which would make a nonspeaking adult with an I.Q. of 150 give up in despair. The use of a little applied intelligence, and some consideration of the child's outlook, will solve this problem.

Shift of handedness. A relatively infrequent cause of delayed speech is the shift of handedness insisted upon by many parents of left-handed children. Occasionally a child is found with no definite hand preference and speech which is very much delayed. Most of the latter children show a spontaneous acquisition of speech as soon as they show a preference for one hand. Studies in aphasia demonstrate that the part of the brain which controls speech is also that

which is responsible for the control of the preferred hand. Therefore, it is wise to determine which hand the child naturally prefers and to prevent any prejudice on the part of the parents from affecting his natural choice. The child should be observed in those activities which have been least affected by environmental training, and these activities are those which demand little speed, strength, or accuracy. Writing, sewing, or cutting with scissors are not good criteria of natural handedness. The teacher or parent should make careful observations of the child's one-handed activity and then take the child to some psychological or speech clinic where the proper apparatus is available for diagnosing the true hand preference.

Once this has been done, a program of manual activity should be initiated. New skills should be acquired with the correct hand, and the old skills should be transferred to the proper side. It is often wise to ask the child to vocalize as he uses his hand in such activities as ball tossing, writing, and hammering. The child should be trained in larger activities first, and then in those which involve the use of specialized movement. Almost miraculous results follow a program of this sort. With no speech training but with intensive concentration on motor skills, the child suddenly begins to speak.

Bilingual conflicts. Some parents deliberately attempt to teach their children two languages at the same time, a procedure which is usually disastrous. Studies indicate that inefficiency and confusion result from such training even in adulthood. Most children in foreign-language homes learn the foreign speech first, and then make the shift when they enter school. This can usually be done without much danger, but when older children in the family insist upon speaking English, the situation becomes dangerous. The teacher must educate the parents to insist upon one language until the child has acquired a mastery of it. If this procedure is followed, no delayed speech will result.

Emotional shocks and accidents. As we have mentioned, speechless children are often found whose histories show that they talked at one time. These individuals often lose their speech because of some accident, severe illness, or shock to the central nervous system. Occasionally a severe fright or other powerful emotion will produce a speechlessness which persists. One child injured his tongue and mouth cavity with a pair of scissors and refused to talk long after the wounds had healed. Another child of five was talking to his mother when knocked down by a large dog. At eight years he was still using pantomime for all communication.

The majority of these cases will respond to the intensive treatment to be described later. However, when the loss of speech followed a strong psychological or emotional shock, it is often wise and necessary to take measures to minimize the effects of the shock. The procedure usually consists of the following steps. (1) Someone, such as a teacher, psychologist, or psychiatrist, who has had no former connection with the child's unfortunate experience, wins his confidence and respect. (2) The original shock-situation is reëxperienced in such a way as to provide a successful solution. The child must somehow recreate the original situation and master it. (3) Attitudes of humor should be associated with the experience. (4) When speech does return or is relearned, the child should verbalize both the situation which caused the shock and the one which canceled it.

As an illustration, the treatment of the child who lost the power of speech after being knocked down by a dog may be described.

The speech correctionist to whom the child was referred spent a week of fifteen-minute daily periods in gaining the child's confidence. In these periods games were played in which the child's dominance over toys, teddy bears, etc., was stressed. The clinician never spoke to the child but used sign language entirely. Gradu-

ally, games were introduced in which activity was accompanied by vocalization. There was a spiral maze in which a little train traveled the grooves when pushed by the humming clinician. If the child pushed the train without humming, the clinician shook his head and took the toy away from him. Pictures of dogs were hidden about the room and the child learned to say dah-dah-dah until he found them. A stuffed toy dog was provided and the child was encouraged to roll a large ball in the attempt to knock it over. The clinician then held the toy dog and made it prance and dodge the ball. All activity by this time was accompanied by some kind of vocalization, and the clinician occasionally used one or two words such as "dog," "train," and "here." A puppy who had previously been trained to play the ball game was brought in, and when the child appeared for his conference the clinician was playing ball with it. The child was given the ball, and, rolling it at the puppy, knocked it over. "Look, look, I did it," he said spontaneously, and from that time on, speech returned swiftly. The child seemed very cruel to the puppy for a while, but gradually this attitude changed. Later, the clinician taught the game of "Knock-down," in which alternately the child and the clinician and the puppy pretended to attack and to be knocked over. The child was very amused by this game and kept a running conversation going all the time in imitation of the clinician.

Emotional conflicts. Another frequent cause of speech loss is emotional conflict. One child stopped talking when the courts, after his parents were divorced, assigned him to the custody of the father. Another, the youngest child and only boy in a family of six children, all of whom were extremely rapid speakers, finally gave up the battle for speech until he entered school, where the competition was not so great. Another child, urged to confess his guilt in a rather serious misdemeanor, refused and was punished severely. He did not speak again until after a course of psychological treatment. Other emotional speech conflicts which have produced speech loss are: forcing the child to recite or perform when he feels himself incapable of doing so successfully; too high speech standards in the home; constant repression at home or in school; deprivation of

attention or so much overattention that an abnormal hunger for attention is created, both resulting in speech loss as a symptom which will satisfy this thwarted desire; and subjection to unreasonable (from the child's point of view) compulsion to such an extent that the only way in which he can resist is to refuse to talk. In each of these instances, the treatment requires elimination of the cause by treating the environment rather than the child.

Speech teachers who do not realize the importance of emotional etiology frequently find themselves working vainly. The child will appear to make progress and then will unaccountably relapse into as much or more error than he had at the beginning. The speech correctionist is frequently required to map out an entire program of home adjustment before her work can begin. She must teach the parents how to react to the child's negativism and demand for attention. The former may be taken care of by commanding and requesting the child to do things he really wants to do, and then when he refuses, accepting his refusal. An example of this may be given:

The teacher said to the child in a rather peremptory tone, "Johnny, you go down to the drugstore this very minute and get yourself an ice-cream cone!" The child answered "No!" and the teacher asked another child, who accepted and returned to eat the ice-cream cone under Johnny's regretful nose. Such a program soon brought a discriminatory answer to requests and commands, and when reward for positive response was added, together with humorous attitudes toward the negativism, the child's whole attitude changed, and his speech soon became normal.

At times, the child's refusals may be chalked up on the board, and matched by the teacher's or parent's refusals. The demand for attention, if reasonable, should be satisfied in other ways. If unreasonable, it can be eliminated by teaching the child that he will get a lot of attention at certain times during the day but not at other times. Penalize

all unreasonable demands by humorous disregard. In addition to the emotional etiology given above, emotional conflicts will frequently produce a very rapid, careless speech, or a repressed speech with minimal articulatory movements, which lead to sound substitutions, omissions, and distortions.

Poor auditory memory span. Another one of the causes of delayed speech seems to be an inability on the part of the child to retain sequences of sounds. He frequently can repeat a sound or a word immediately after it has been pronounced but seems to be unable to retain it for more than a few seconds. Simple sounds appear to be retained more easily than words of one syllable, and polysyllabic words present insuperable difficulty. Many parents who fail to recognize this condition attribute the child's speech failure either to stubbornness or to a lack of intellect, and penalize the child severely. This causes a negativism which complicates the situation.

Most of these children who possess short auditory memory spans can be trained to retain auditory impressions long enough to acquire good speech. The training must include teaching the concept of sequence and the delayed response. Many exercises for teaching these factors will be found in the chapter on the treatment of articulatory disorders. Young children must be taught the concept of sequence by identifying sounds with objects. Thus, in one case, the concept of sound sequences was attained in the following manner:

Three different dolls were named "wa," "ba," and "ma." After the child learned their names, the teacher pretended that the dolls were going to school, and as they entered the door the child was to say their names. Sometimes, two entered the door in a hurry, and so the child had to say "ma" and "ba" in swift sequence. By varying this situation in many ways, the child soon learned to

point out the dolls in their proper sequence and to give their names in proper order. By insisting that the child cross the room to whisper the names to her mother, the delayed response which necessitated the retention of sound sequences was taught, and from this simple beginning a sound plan of treatment was constructed which resulted in good speech.

Aphasia. One of the more uncommon causes of delayed speech is aphasia, which is usually the result of a severe birth injury or an injury to the head. It is always necessary to rule out the other causes, especially those of high-frequency deafness and feeble-mindedness, before aphasia is considered.

The child may appear to be congenitally deaf, but, if there is a history of occasional response to air-born sound (rather than to sounds which might be carried through the floor or other vibrating bodies), the child should be carefully examined by a specialist in this field. Highly emotional situations often produce such responses when they are not apparent in ordinary activity. Other signs of aphasia manifest themselves in what seems to be a "forgetting" of the purposes of well-known objects such as a pencil or spoon. The treatment of these cases is very difficult and must be carried out through the development of a serviceable gesture language, to which vocalization may later be added. The kinesthetic method of teaching speech sounds is much more effective with many of these children. In any event, the parent and teacher should seek to find other avenues of speech teaching than those which are normally used, and they should study carefully the more recent works on this subject. The references at the end of this chapter will serve as a primary bibliography. The disorder is so rare that few teachers ever see an aphasic child.

General principles of treatment. In the preceding discussion we have suggested several methods for retraining

the child with delayed speech. There are certain general principles upon which that treatment is usually founded, and these will be outlined briefly.

Although there are a few exceptional parents who possess the temperament and understanding necessary to carry out the remedial program, it is usually well to have someone who has had no previous history of failure in teaching speech to the child do the work. A specialist in speech correction is probably best fitted to handle the situation, but we have seen excellent results obtained by interested primary teachers. In the latter instance, rather careful supervision is necessary, because many problems arise which require the information that specialized training in speech correction and clinical psychology makes available.

It is important that the place selected for the speech teaching be divorced as much as possible from the former environment. When possible, the child should be taken out of the home. If this is not convenient, some room should be chosen and changed about so that there are few opportunities in it for self-amusement. We have found that in a clinic room with only a child's table, two chairs, and a few pictures on the walls the child's attention will concentrate on the teacher and make him dependent upon her for his activity. Boredom is one of the best motivations for coöperation, and if the child must depend upon the resources of the teacher, the speech training progresses much more rapidly. The teacher will use many playthings, but she should bring them with her and allow the child to use them only when she thinks it advisable. Some of the more spoiled or more negative children may rebel when this regime is first instituted, but they soon become interested and look forward to the speech periods as the most pleasant parts of their day. One or two half-hour periods each day are usually sufficient, and little progress in terms of actual vocabulary should be expected during the first two or three

weeks. Much swifter progress will be achieved if the groundwork is laid carefully.

As we have indicated, it is essential that the cause of the speech delay be eliminated as soon as possible. Since this usually involves treatment of the parents and the associates of the child, it is best carried out through daily home assignments. For example, in one instance in which the cause was a lack of motivation, the speech-correction teacher sent home daily assignments of which the following are typical:

Collect five instances during the day in which the child used gesture without vocalization in requesting some object, and in which you refused to give it to him until he had grunted or made some speech attempt. Please write up the accounts of these five and send them to me.

Your child likes the red ball. Show it to him with your eyes closed and ask him if he wants it. Report his reaction.

It is usually wise to ask for a written report, since this insures a delegation of some responsibility to the parents and procures much better coöperation. Each day should contain some attempt to minimize or eradicate the condition that caused the speech delay.

Selecting the first words. The next task is that of selecting the words to be taught. The first project should not contain more than five or ten words, and they should begin with the easier sounds, *m*, *b*, *p*, or *w*. If possible, they should be monosyllabic or should consist of repeated syllables, such as "mama." They should be names of things or activities which the child enjoys. If the child has some distorted speech sounds which he habitually employs for naming favorite objects, it is wise to select new toys or new activities which he has not previously named. When this principle is followed, no unlearning is necessary. Nonsense names can be used if the true names are too difficult

or begin with the wrong sounds, since the object of this first training is to teach the child to use speech as a tool and to set up proper speech standards. Later on, the child can be given the more difficult task of unlearning old incorrect names and substituting correct ones for them. The parents and teacher alike must use the nonsense name, however, when referring to the object in the presence of the child. We usually include about two true names among each set of five words used in building the primary vocabulary. Thus, one child was taught the following names in the order given:

1. "moop" (the name given to an oddly shaped mass of modeling clay which was used in a hiding game).
2. "wap" (the sound made by the child and teacher in unison as a signal for a Jack-in-the-box to pop out).
3. "boom" (the name of a toy cannon).
4. "papa" (the name he used for himself when he pretended to be his father, a physician, engaged in treating the teacher, who pretended to be sick. The boy was given an old medical satchel and tongue depressor and left the room to knock at the door. Whereupon, the teacher asked "Who's there?" and refused to open the door until she knew who was knocking.).
5. "ba" (the name for "ball," or the sound used as the boy bounced it).

After the first set of names has been chosen, the teacher begins to teach the sounds which are used therein. This is done in several ways: (1) by stimulation and other forms of ear training; (2) by combining the sound with some activity; (3) by placement of the organs of speech. The sounds are not incorporated within words but are taught by themselves in isolation, or in short nonsense syllables such as "pa" or "woo."

Ear training for delayed speech cases. Some typical methods used in teaching the child to hear the primary speech sounds may be illustrated by the following teacher's report:

Today I had my first session with Tommy. He evidently had created quite a scene at home and both he and his mother were in tears when they entered the room. As we had planned, the mother left immediately, locking the door behind her. I said "Hello, Tommy," and paid no further attention to him, being busily engaged in filling typewritten O's on a page in front of me with red penciling. Whenever I finished one, I said "p-p-poo," and went on to the next.

Tommy clung to the door for about three minutes but stopped crying. He then made an exploration of the room, finally stopping beside me to watch what I was doing. He became very interested and I noticed that whenever I completed an O he would form the "p" sound with his lips as I was saying it. Finally he made gestures requesting the red pencil and paper, but I refused with a nod, explaining that I was almost through and that perhaps he could do it some other day.

Having finished, I put the paper and pencil away in the desk, and took out the medicine bottle of water and the cup. Then I said to Tommy, "Listen now, and you'll hear what the bottle says to the cup. It says 'puh-puh-puh.'" Then I began to pour the water into the cup and he listened with great interest, nodding his head. He reached for the bottle and I let him pour, as I said the bottle-sound. I then put the cup and bottle away and said, "Let's you and I play the bottle game. You be the cup and I'll be the bottle." He nodded agreement with great enthusiasm, and I turned him around so that his ear was near my lips and said into it a series of "puh-puhs."

As soon as his interest waned a little, I blindfolded myself and told him to try to prevent my pouring into his ear-cup. We had a great time and he almost wore me out chasing him, but he heard a lot of the bottle-sound, and had identified it as such.

I then brought out a little bell and told him to ring it whenever I made the bottle-sound. He was blindfolded during this game. I tried to mix him up by using other sounds such as "kuh" and "muh" but only caught him up once. Before we knew it, his mother had returned, and Tommy wept again at having to leave such an interesting place so soon.

The production of speech sounds. The purposes of ear-training techniques are to stimulate the child with the isolated sound, to teach the child to identify the characteristics

of the sound, and to train him to discriminate between it and other sounds. It is usually unwise to ask the child to make the sound during the first few speech sessions. He should merely listen and signal his awareness through some form of pleasant activity. The teacher makes the sound; the child reacts to it. Many varieties of games and activities should be invented to carry out these purposes, and the teacher needs the quality of inventiveness if she is to be successful.

After four or five sessions of ear training, the teacher should try to get the child to associate the sound with some activity. With most of these children, negativism and refusal will result from a direct request for speech attempt. But when speech is merely a part of a general body activity and the attention is focused on the latter, no difficulty is experienced. For example, one child would gladly make the "mmmmmm" sound whenever he turned the crank of a musical toy, although he had previously refused to attempt it in imitation of his teacher. It is usually well to explain to the child that the activity can be performed only if the sound is made at the same time, and if the teacher illustrates this principle and speaks the sound in unison with the child's activity, the child will coöperate. Occasionally, the association becomes too specific, and the child insists upon cranking the toy whenever the sound is made. This tendency can be eliminated by a joint activity of teacher and pupil, in which the one does the cranking while the other makes the sound. Other techniques will suggest themselves to any ingenious teacher. One of the most successful methods takes advantage of the child's natural urge to identify himself with what he perceives. In the case of the child in the last-mentioned teacher's report, he was told that in place of playing the cup in the blindfold game, he could be the bottle. Immediately he began to pronounce the "p" sound without difficulty or hesitation. The teacher can tell little stories about the objects or things with which

the child has identified himself, requesting him to make his sound whenever he hears his name mentioned. Thus a story about a bottle would produce many isolated speech attempts to say the "p" sound.

Kinesthetic methods. There are other ways of teaching a child to produce the isolated speech sounds besides those mentioned above, although most speech correctionists prefer to use the latter first. When the ear-training and associated-activity methods fail, all speech correctionists turn first to the kinesthetic method. This method may briefly be described as the teaching of speech movements, relying upon the "feel" or kinesthesia for their identity in the mind of the child. Thus the "k" sound, to a child taught by this method, is the sound produced by suddenly pulling down the back of his tongue from its former position in contact with the roof of the mouth. The teacher indicates the part of the tongue and place of contact through touching the part concerned or through manipulation of the speech organ itself. Stroking in certain directions can indicate direction of position change. Mouth openings and lip positions are produced by viewing them in the mirror, by watching a model, or by manipulation. Nasalization is suggested by pointing to the nose or by a signal indicating complete mouth closure. Voiced consonants may be indicated by stroking the larynx. In the hands of a clever speech correctionist, these methods are very effective and may produce almost miraculous results. They are vital to the success of the deaf child, and many children who have a short auditory memory span make much more rapid progress through the kinesthetic method than they do through those involving ear training. The kinesthetic method is always used as a supplementary aid when the child with delayed speech is spastic or possesses a sluggish jaw, tongue, or palate. A detailed description of the kinesthetic method will be found in *Children with Delayed or Defective Speech*,

by Stinchfield and Young, a reference which may be found at the end of the chapter.

Word production. After the child has been taught to make the sounds which are included in the five or ten words previously selected, the teacher's next task is to teach him to combine those sounds to form words. There are two major ways of accomplishing this: by teaching whole words and by teaching sound sequences. Both methods should be used for almost all cases of delayed speech, and, for both, ear training should precede actual performance. Generally speaking, the whole-word method should be used for simple monosyllabic words, whereas the sound-sequence method should be used for those of more than one syllable.

In one case, the word "mop" was among the first five to be taught. After the child had been given ear training in saying the *m* and *p* sounds by themselves, the teacher began the ear training necessary to the production of the whole word. She left the room in a very mysterious manner, returning with a bottle of colored water and a mop. As soon as she entered the room, she went solemnly to each corner and said "mop, mop, mop." Then she made another circuit of the room with the child, and in each corner she said the word "mop" into the ear of the child. On her third circuit, she spilled a little water in each corner, uttering the same word three times, prolonging the *m* slightly and emphasizing the *p*. On her fourth circuit, she took the mop itself and wiped up the water with it, saying the word rhythmically as she worked. She motioned to the child to help her, and, as he took hold of the handle, he began to say the word in unison with her, somewhat to her surprise. In this case, the vivid stimulation and identification with an activity were sufficient to produce the spontaneous response.

When the sound-sequence method is used, the word should not be broken into all of its component sounds, for

the vowel should always be spoken in connection with the consonants which precede or follow it in the syllable. Thus the word "wipe" should be sounded as "wi-p," and the word "cookie" as "kooh-kee," never as "w-i-p" or "k-oo-k-ee." The reason for this is that consonants vary in their formation according to the sounds that follow or precede them, and the child must not be asked to break up words into any finer elements than necessity demands.

Since most of these children can understand spoken language, the ear training can consist largely of requests, one word of which is sounded out. Thus the teacher says to the child, "Please go to the chair and get the picture of the 'puh-pee.'" The pause between the divisions of the word may be prolonged. Often it is necessary to use such activities as pointing to blocks as each part of the sequence is spoken, going slowly at first, then speeding up until comprehension occurs. For example, a child was taught the nonsense word "wapeema" as the name of a certain toy. Having difficulty in integrating the parts "wa," "pee," and "ma" when they were spoken slowly, the teacher lined up three blocks on the desk, pointed to each as the syllable was spoken, and gradually increased the speed of the sequence until the child grasped the word and ran to get the toy. After several soundings of other words were carried out in the same manner, the child became very adept at grasping the word, even when the sequence was spoken slowly. Many children have as much difficulty in comprehending speech sequences as others do in understanding those of reading.

Similar devices can be used to get the child to sound out words for himself. The teacher can pronounce a sound such as "kooh" twice, the child chiming in the second time and pointing to the same block. The teacher then pronounces the second syllable, "kee," twice, and again the child shares the second response. Then the child points

and speaks, first slowly then speeding up, the two syllables until they are plainly integrated. Later on, the teacher and child can prepare some word, and the parent should be asked to guess what it is. Once words have been achieved, the child should always be taught to sound them out as well as to speak them as wholes. This is important, because the act of integrating sequences of speech sounds is probably one of the most important tools of speech acquisition. Without it, the child is deprived of an important aid in learning new words by himself.

After the child has mastered his first primitive vocabulary project and consistently uses the words when speaking to the teacher, the parent should take over the task of bringing them into his daily life. This is done through the building up of proper speech standards and through the use of nucleus situations, negative practice, speech assignments, and good-natured penalties and rewards. The student is referred to the chapter on the treatment of articulatory disorders for a more detailed discussion of this last part of the therapy.

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Topics discussed in this monograph are: characteristics of normal and delayed speech development; results of speech, mental, hearing, and physical examinations given to a large number of delayed speech cases; a detailed description of the kinesthetic method for teaching new speech sounds.

cases may now be outlined. (1) *The speech defective must be convinced that he has errors which he must eradicate.* (2) *The causes of the disorder, if still existent, must be eliminated. If those causes are no longer present, their influence must be counteracted.* (3) *Through intensive ear training, the old word configurations are broken down so that the correct sound and the error may be isolated, recognized, identified, and discriminated.* (4) *Through various methods, the speech defective must be taught to produce the correct sound in isolation and at will.* (5) *The new and correct sound must be strengthened.* (6) *The new sound must be incorporated within familiar words, and the transition to normal speech must be accomplished.* (7) *The use of the correct sound must be made habitual, and the error must be eliminated.*

In cases where the person makes more than one error, it is well to work with the sounds according to their usual developmental order, first the lip sounds, then the dentals, then the gutturals, then the complicated tongue sounds, and, finally, the blends. It is usually wise to work with the sound first in the initial position, then in the final position, and, finally, in the medial position. One should continue working with one sound until the person can make it alone at will, can use it in all three word positions when he watches himself, and uses it habitually on about ten common words. Then we may rely on parental and teacher coöperation to do the rest.

Convincing the Student That He Makes Speech Errors

The child must be convinced that he has a problem which he must solve. This is not so easily done as may seem to be indicated. Owing to sheltered environments and the tolerance of associates who have become accustomed to the speech difference, many speech defectives grow to adulthood without ever having been made aware of their speech disorder, which

may be so noticeable that it shrieks its presence whenever its possessor opens his mouth. If friends and acquaintances will not mention it, certainly the average stranger will not. We seldom hear ourselves speak. Instead, we listen to our vocalized thinking. And so the speech defective himself has little chance of becoming fully aware of the nature or frequency of his errors.

Although many articulatory cases are thoroughly aware of their speech disorder, they do not seem to recognize all of their errors; and there are other cases who seem totally unaware of any speech difficulty. Small children, especially, need to be convinced that they have sound substitutions, additions, omissions, or distortions before they will coöperate or respond to treatment. The older ones must learn to recognize error whenever it occurs. A vague, generalized feeling that something is wrong with the speech will not provide sufficient motivation for the type of retraining that is necessary.

Teachers frequently ask whether or not it is advisable to work upon the child's speech in view of the self-consciousness and embarrassment which might be produced. The answer to this question is that the quickest way of getting rid of these errors is to make the child aware of them. The habits should be broken before they become fixed. Moreover, it is perfectly possible to work on a speech defect without shame, and if the teacher makes the child understand that a certain skill is to be learned and that a problem is to be solved, no insecurity will be created. If she adopts a calm, unemotional attitude herself, empathic response will ensure a similar attitude in the child.

There are various ways of teaching an articulatory speech defective to recognize his errors, and some of them are given in the next paragraphs. One mother patiently corrected her child on every mispronounced word for three

successive days, and he responded by refusing to talk at all for a week. With small children, no such nagging is necessary or advisable. The teacher should select five or six common words in which the child uses the error and should try to create in the child the feeling that in these words he is doing something incorrectly. She may tell him that there are other troublesome words, but she should set up as the first definite project the correction of these five or six. By narrowing the disorder to such a slender nucleus, the task is made easier and very specific. The child must learn to recognize these words as "wrong words" and must come to realize that in these words he is likely to use "wrong sounds."

Sample exercises for teaching the child to recognize his errors.

1. The teacher reads a story to the child in which the five or six error-words are used many times. The first time she reads it, she imitates the child's errors, cupping her ear every time she does so. The child is asked to do the same thing. The second time, she reads it correctly except for one word. The child is asked to cup his ear when he hears the one error.
2. The teacher reads a list of words among which are included the error-words. The child repeats all but the error-words after the teacher, who pronounces the error-words twice, first correctly, then incorrectly.
3. The child tells a story or recounts some experience and the teacher rings a bell whenever she hears the child mispronounce one of the error-words.
4. One of the error-words which is the name of a certain object is selected. The teacher draws two pictures of the object and asks the child to scribble over one of them. The teacher then names the two pictures, pronouncing the scribbled one with the child's error, and pronouncing the other one correctly. She then tells the child a story, sometimes using the word correctly and sometimes incorrectly. The child is asked to hold up the appropriate picture. The child then tells a story while the teacher holds up one picture, usually the scribbled one.

Sample exercises for teaching the older child or adult to recognize errors.

1. The student silently reads prepared material which illustrates the error: Thus: He thaw/saw the bird fly to the netht/nest. The teacher then reads it aloud.

2. Have the student write from dictation, putting down in phonetic spelling the errors which the teacher purposely makes.

3. Teacher speaks a word five times, once with error. Student signals when error occurs. The same assignment can be made but with the teacher saying the word correctly only once out of five trials.

4. Same as above but with student immediately imitating teacher's error. (Note: speech penalties are more effective than any other.)

5. Using material with *s* words (or other error-sound words) underlined, have student (1) make judgment as to error occurrence as he reads; (2) pause after attempt on *s* word while teacher imitates and asks for judgment of right or wrong; (3) pronounce the *s* in three different ways, raising finger for the incorrect pronunciations; (4) repeat each *s* word three times, making judgment as to which attempt was the best; (5) repeat *s* sound five times before proceeding, while teacher makes judgments for each; (6) prolong *s* sound and make judgment.

6. Use the same assignments as above but (1) reading lists of words, one at a time; (2) saying prewritten speech; (3) using conversation.

7. Student uses telephone and teacher interrupts conversation by hanging up immediately upon occurrence of error.

8. Teacher requires student to do something absurd (such as going to mirror, shaking head, and saying "Oh, oh") after each error.

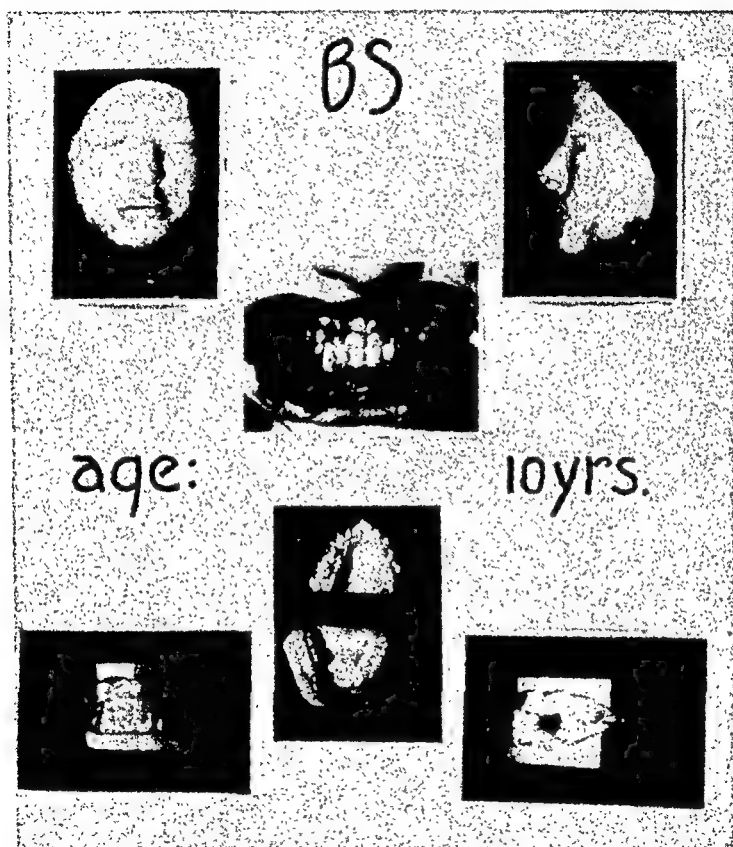
9. Student confesses and points out own errors each time they occur.

10. Student imitates own error whenever it occurs, exaggerating it.

Elimination of Causes

As we have mentioned in an earlier chapter, the speech correctionist should leave no stone unturned in discovering

the factors that produced the speech disorder, for they frequently affect the type of treatment offered. Organic defects of the tongue, teeth, jaws, palate, and lips are not



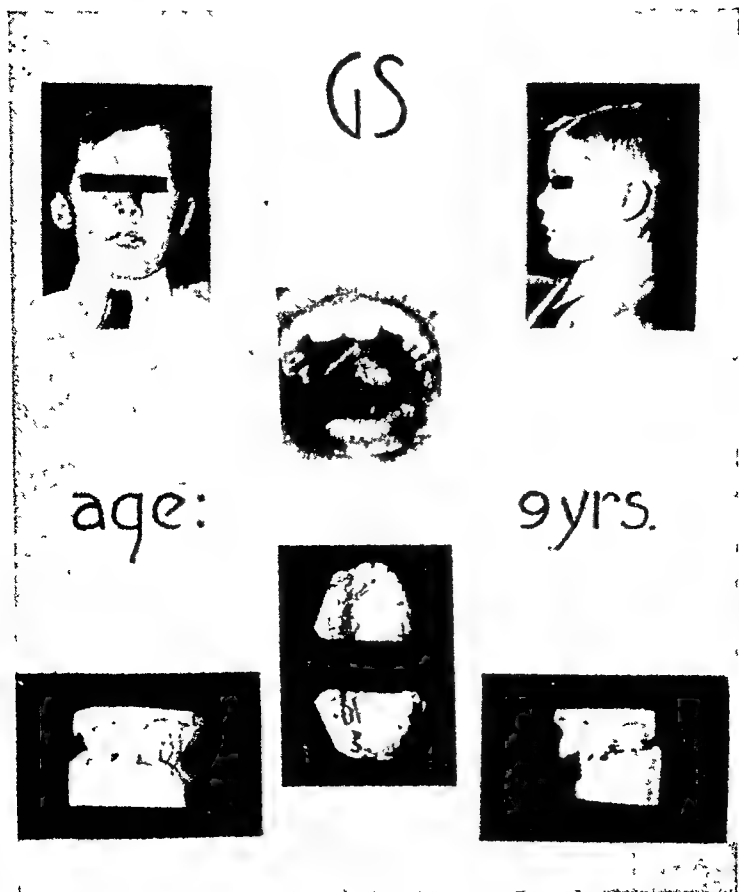
Courtesy of Dr. Kurt von Frowein.
 Fig. 13. Photograph of a badly undershot jaw. This case had no speech difficulty despite the organic defect.

always accompanied by defective speech, for some individuals learn the appropriate compensatory movements necessary to produce correct speech sounds. However, these individuals may be said to have acquired good speech in

spite of the organic abnormalities, perhaps because they were given better speech training in the home or were subjected to greater social pressure toward speech conformity. Certain studies have shown that mentally retarded children with organic defects have more speech defects than intelligent children with similar organic abnormalities. Thus, although these mouth deformities cannot be said to be the essential causes of speech disorders, they certainly are contributory. Again, it should be apparent to all students of speech that transitory organic defects, such as the loss of the front teeth, can create bad speech habits which persist long after the original cause has been removed or remedied.

Orthodontal treatment. There are two methods of eliminating these causal factors: reconstruction of the defective structure and the employment of compensatory movements. In recent years, orthodontistry has made great strides, and almost unbelievable changes in dental, palatal, and jaw structures have been accomplished. The speech-correction teacher should refer all children with marked mouth deformities to these specialists, and should begin her work after the reconstruction has been carried out. Unfortunately, such reconstruction is very expensive, and many cases cannot be taken care of in this way. Nevertheless, the speech-correction teacher should acquaint herself with the resources in the orthodontal field so that she will not waste months of effort in teaching compensatory movements to a child whose speech problem can be taken care of through surgery or the displacement of structures. Similarly, she should realize that palatal abnormalities are frequently associated with those of the jaws, and that orthodontal projection or retraction of the jaw can facilitate tongue contact with the roof of the mouth. Modern surgery also offers a wide variety of repair and reconstruction techniques. Scar tissue can be excised, and grafts can be made which will provide the necessary mobility. High

palatal arches can be lowered, and the velum can be modified to almost any desired degree. Much of this work



Courtesy of Dr. Kurt von Frowein.

Fig. 14. Photograph of a badly overshoot jaw. This case had difficulty with *s* and *z* sounds.

should be done early in childhood, and the speech-correction teacher is often responsible for seeing that it is done. Frequently, parents postpone such remedial work until too

late, but they may often be convinced of its necessity by the teacher who points out the social maladjustment which such defects may produce.

Paralyzed structures occasionally can be helped by exercises, and a professional physiotherapist should be consulted in planning a remedial program if the physician's report indicates a possibility of success. Such remedial work usually consists of recourse to the more biological functions and the tying up of the specialized movement with gross muscular action. Spaced practice, well motivated by graphs of successes, is advisable.

Hearing disabilities frequently necessitate the use of hearing aids, visualization, phonetic diagrams, and schemes of muscular contractions. In deaf and blind children, manipulation by the teacher to set the jaws, mouth, and teeth is sometimes required. In cases of mental deficiency, many articulatory disorders occur, and the speech correctionist is called upon for aid. Although it is recommended that speech correction be carried out by the regular special room teacher, the speech specialist should plan the program, fitting the technique to the typical traits of the feeble-minded.

Teaching compensatory movements. As we have said, many cases showing severe organic defects cannot be helped by the orthodontist or plastic surgeon because of age or financial reasons. The picture is by no means hopeless, however, since all of the speech sounds may be made in various ways. The art of the ventriloquist demonstrates compensatory activity of the tongue for that of the lips and jaws. Many normal speakers have profound anatomical abnormalities, occasionally so marked as to excite wonder in the speech correctionist familiar with the ordinary production of the speech sounds. Perfect *t* and *d* sounds, for example, have been made by individuals so tongue-tied that they were unable to lift the tongue tip to contact the upper teeth. Inmates of prisons frequently learn to talk out of

the side of the mouth—the one farthest away from the guard—with but minor jaw movements.

In order to teach compensatory or nonstandard ways of making any speech sound, it is first necessary to make a phonetic analysis in terms of the type of sound to be pro-



Courtesy of Dr. Kurt von Frowein.

Fig 15. Photograph of the mouth of a child who had suffered a severe lye burn. The tongue is being lifted as high as possible. Despite the handicap, the child had learned compensatory movements sufficient to give him perfect speech.

duced. For example, the production of an *s* sound requires the propulsion of a narrow stream of air past a cutting edge. The cutting edge should be placed at about right angles to the air stream in order to produce a clear *s*. The average person produces this narrow stream of air by placing the sides of the tongue along the side teeth, thereby cutting off all lateral escape of air, and by grooving the center of the tongue so that the air stream is projected directly past the cutting edge of the front incisors. Lacking these front teeth, or having them widely spaced, the person can get an

equally good *s* by directing the air stream past the cuspids or bicuspid on the side of the mouth having the better teeth. This new mechanics, however, is not quite so simple as the preceding sentence might imply. The tongue must adjust itself so that on one side it makes a larger occlusion and the groove is diagonal. The lips must plug the former opening and part at the appropriate side. Frequently the mandible must be moved sidewise so that the best upper and lower teeth will be brought together. Thus the teacher must plan the type of compensatory mechanics necessitated by the particular mouth deformities involved. In this plan, the teacher should take into account or seek to minimize as far as possible the following factors: complexity of performance (the fewer adjustments, the better), ease of transition from other sounds, amount of facial contortion, distinctness of kinesthetic and tactual sensations, and the motivation and coöperation of the subject.

In teaching compensatory mechanics, then, the teacher should follow this general outline. (1) Note how the student articulates the defective sound. (2) Make phonetic analysis to determine what the essential mechanics of the sound must be. (3) Discover what structures the student might possibly use to satisfy these requirements. (4) Give the student a thorough course in ear training, stimulation, and discrimination along the lines of the program sketched in the next section. (5) Through manipulation, phonetic diagrams, mirror work, imitation, and random activity, try to get the student to produce a sound similar to that made by the instructor. (6) Once achieved, do not let student move a muscle of face or body until he prolongs, repeats, and uses it in nonsense syllables a great many times. (7) Build up its strength through techniques suggested in the next section. (8) Do not worry about exaggerated movements used by the student in making the sound. At first, most students will use facilitating movements of other structures as a baby uses

gross movements prior to specialization. We frequently encourage head and jaw movements or modifications of smiling, chewing, biting, and swallowing as accessory tools. These extraneous movements drop out as the new performance pattern becomes habitual. (9) Increase the speed with which the new performance pattern can be initiated. No compensatory movements will become habitual if they cannot be used quickly and easily. (10) Be careful to change the transition movements as well, working for new and quick patterns of change from one speech sound to another.

Functional causes. Besides the organic factors previously described, we have a large number of functional causes of which we must take care. Among these are emotional maladjustment, imitation, poor speech standards in the home, improper training, poor auditory discrimination, developmental interruptions, short auditory span, and a lack of motivation.

Emotional maladjustment may produce articulation defects in so many ways that it is impossible to describe them completely. Some of the more common are as follows: The negativistic period which so frequently occurs in children about the time that they are mastering the more difficult sounds occasionally accounts for an attitude of strong rejection of parental criticism of all kinds, and especially that of speech criticism. Children have been known to adopt new errors and to perpetuate old ones as a reaction to parental criticism. Occasionally, a child will adopt another child's speech error in order to get the attention given to the latter. (Children sometimes adopt the speech errors of the parent they love best or with whom they identify themselves. Even as they adopt their parent's gait and mannerisms, so also do they adopt their forms of speech.) Speech errors which are encouraged by parents in the silly belief that they are "cute" frequently perpetuate themselves long

after the child is able to make the correct sound. Occasionally, an adolescent will suddenly develop a neurotic lisp or baby talk because of his great difficulty in making the necessary social adjustments and his subsequent desire to remain a child. Such regressions to a former level of more adequate and successful adjustment are well known, and it is impossible to treat the symptom until the cause is eliminated. One should help the child to make a better social adjustment and to gain insight into the reason for the sudden appearance of his speech errors.

In our chapter on delayed speech, we have discussed methods for eliminating negativism, lack of motivation, and poor speech standards in the home as functional causes. The same methods may be used for eliminating similar causes of articulatory speech defects in older children.

It may be said that anything which puts a great deal of pressure on speech will tend to produce speech defects of all kinds, and, if this pressure is exerted during the development of speech, articulatory disorders frequently occur. Some of these factors are: fear of interruption, habitual urge to interrupt others, oral confession of guilt, too high speech standards in home or school, public recitation or speaking of pieces, too much excitement, ridicule, fear of punishment or sarcasm, speech when fatigued, bluffing, too great parental or teacher pressure for school progress, speaking while confused, general unhappiness or emotional strain, and constant need for speech to strangers. There are many others, and the average teacher can readily devise ways for eliminating or minimizing these conditions after she discovers what they are.

Imitation and poor environmental speech standards are difficult factors to eliminate, but the best approach seems to be through frank recognition of the problem, the adoption of other models, and the provision for contacts with other environments which have high speech standards. The

teacher should not berate the parents or companions whose speech is not acceptable or ask the child to adopt a speech which is foreign to his environment. A better policy is to tell the child that he may continue to use the jargon and poor speech of his home and neighborhood while he is there, but that he should learn a different type of speech for other situations. He should be shown other environments and future opportunities, and the necessity for adequate speech therein. Without such a horizon, no permanent progress will be made. Very seldom can the home or neighborhood speech standards be changed, and the speech correctionist may as well face that fact.

Weak auditory memory span. The factors of poor auditory discrimination and short auditory memory span are usually taken care of in the intensive ear training that is the keynote of modern articulatory therapy. Many exercises to take care of these factors may be found in later pages of this text, and it is well to give the child a preliminary course in discrimination, recognition, remembrance of sound sequences, and self-hearing. We have found that most inadequate auditory discrimination or memory span is due to a lack of directed attention, and will respond to appropriate treatment. Some special techniques for improving one's auditory discrimination or memory span follow.

1. Auditory memory span drill. Teacher pronounces a series of digits or words. Student repeats them after intervals varying from 1 to 60 seconds. This assignment should be followed by the student's giving himself his own series, waiting the prescribed interval, and then repeating. Errors should be checked, and this procedure should be strongly motivated. The above drills can be carried out through phonograph records, the student being asked to write down the series.

2. Jabber-repetition. This consists, like the above, of stimulation and repetition. The teacher says certain nonsense words (polysyllabic) such as "wahwo-kadda-makeree-samma." The student repeats these after a certain interval, which should be

gradually increased. As in the last assignment, the student should then give himself the jabber stimulation and attempt to repeat as closely as possible. The syllables may also be recorded phonographically for stimulation.

3. Student distorts certain speech sounds and then attempts to repeat these distortions exactly. The teacher should illustrate using the "dark *l*" sound or the lateral lisp.

4. It is often wise to begin these assignments with the direction of the speech defective's attention to the duration of his sounds, since this feature is more easily recognized and judged. Thus the student is instructed to repeat after the teacher the following nonsense word: *laaaaaalo*, seeking to keep the relative and total durations of the repetition as close as possible to those of the stimulation. Other similar nonsense words, including those which prolong the continuant consonants, are given. Phonograph records in which the duration can be identified are very useful in providing a checkup. The student should then give himself similar stimulation, and repeat it after an appropriate interval, while the teacher checks.

5. Assignments similar to the above but using inflections as the stimulus material are very helpful in training the individual to listen to his speech.

6. The student is told to pronounce certain continuant consonants or vowels (both in words and by themselves) five times, prolonging the consonant or vowel slightly each time. The same type of assignment may be used for inflected vowels and consonants. The teacher checks. Written material may be used for this, such as: *ssso, sssso, sssso, sssso*.

7. The student, using a stage whisper, prolongs, inflects, or distorts certain vowels or continuants. He then repeats vocally, as closely as possible.

8. The student should be given frequent self-listening periods, in which he makes a sound and listens closely to it. Not more than two or three words should constitute a period, and the student must be extremely alert. Later in the treatment it is wise to have the student use these periods for judgments of correct sound production.

Delayed speech development. We have mentioned the fact that interruptions in speech development seem to produce typical errors. Severe illnesses often occur during the

first years of a child's life, and they may interrupt the practice of inflections, or the babbling period, or the naming period. Occasionally, very clear case histories point to these interruptions as causal factors, and it is interesting to note that these cases progress much more rapidly if they are allowed to begin with the type of activity they have missed. In many cases it is impossible to get definite histories of the type of speech being used by the child at the time the illness or accident occurred. Nevertheless, we have found that, if illness occurred during the babbling period, it is well to have the student practice some of this vocal play. From this activity, many adults seem to get a peculiar pleasure, which is out of all proportion to its novelty, and without suggestion from the clinician they proceed to go through many of the same phases which the child experiences—*i.e.*, they use doubling first, then true disyllables, then inflections. Certain combinations are practiced much more than others, and frequently the sounds which they have never been able to say are used over and over, although they are so lost in the matrix of the babbling that a keen ear is needed to distinguish them. We often recommend that they combine swallowing, chewing, biting, and smiling movements with this vocal play. The student should do it alone, and with a clear understanding of its purpose, to avoid self-consciousness. He should keep out analysis and purposeful combinations, and should relax and let the babble go where it may. After the student has practiced babbling in this way for about ten five-minute periods, scattered throughout several days, the speech correctionist should try to get him to repeat certain combinations of the nonsense material as they occur in the babbling.

Ear Training

The vast importance of ear training. Many texts in speech correction agree that the first step in remedial treat-

ment of articulatory cases should be ear training, and most speech correctionists employ it. The exact nature of this ear training is too often vague, unsystematic, and perfunctory, although it is probably the most important tool in the clinician's kit. If the preliminary ear training is done well, little difficulty is experienced, even with the most severe cases. The speech-correction teacher is prone to slight it because immediate results are not forthcoming, because it demands strong motivation, because it necessitates lesson preparation and clever techniques, and because she does not realize its nature or importance. Many parents and teachers feel that all they need to do to get rid of such a speech defect is to tell the child that he has said the word wrong and must try it again. Often they attempt to show him by increasing the loudness of the correct word as though he were hard of hearing, a proceeding which is obviously poor pedagogy. It may be said with the utmost emphasis that no teacher should attempt to get a child to try to make a new speech sound without first giving him systematic ear training.

The teacher of the articulatory case must appreciate the point of view of the speech defective with respect to the errors involved. To the uncorrected lisper, for example, the substitution of *th* for *s* in the word *soup* is entirely natural. He is often unaware that any substitution has occurred. The liquid's name just happens to be *thoup*. The auditory sensations for *s* and *th* are fairly similar even when produced by some other person. Unless one has learned to isolate them from the words in which they normally occur, or has associated them with some specific object such as a goose's hiss, or has produced them with different tongue movements, there will be very little discrimination in hearing them. Discrimination of sounds involves, as we shall see, recognition, identification, association with symbols, and differential bodily reactions. The lisper without

correction or training has no power of discrimination because he has none of these attributes of discrimination. Frequently the lisper can be taught to tell the difference between the *s* and the *th* when produced by another person without being able to recognize his own substitution of those sounds. This is due to the fact that a speech sound is a complicated combination of hearing and feeling. Both are blended and integrated into a perceptual whole, into a configuration. Thus, to the lisper, the *s* and *th* sounds are not different enough to overrule the similarity of the habitual tongue movements which he has always made in identical fashion for each. If he attends to the auditory sensations alone, he can tell the difference, but, if he must also attend to the feel of the tongue, which is similarly placed for both sounds, the sounds will be perceived as being more alike than different.

If this is the case when the sounds are isolated, it is clear that, when the sounds are incorporated within the unitary sound sequences called words, there will be even less chance for discrimination between correct and incorrect sounds. As students of phonetics know, there are no such things as syllables in speech, although there may be in orthography. In most spoken speech, even the words are but parts of the sentence as a whole, and may not be considered as units. Therefore, within the word, any individual sound can have little perceptual importance. Most children learn words as wholes, and not as sound sequences. Each word is a complex configuration, having within it patterns of muscular movements, patterns of sequences of auditory sensations, and a unitary meaning. It is a unit and an organized whole.

Recognizing this unitary nature of the word and the subordinate nature of the sounds which compose it, we can easily understand why the articulatory case does not recognize his errors, and why he frequently refuses to believe

that the correct sound, when used in an old familiar word, is indeed correct. It frequently appears to these cases not only as strange and unfamiliar but as definitely incorrect. Moreover, the fact that the lisper has so thoroughly incorporated the *th* sound in the configuration whose meaning is *soup* gives us the explanation for the curious relapse that occurs when a new sound is used in familiar words without previously being strengthened. Many lispers, for example, can learn to make a good *s* when it is isolated, but, if the teacher insists upon their using it in familiar words, they go right back to their old error, and frequently lose the ability to make it even in isolation. It therefore becomes necessary to build up the new sound in isolation and in simple configurations, to tear down the old configurations and isolate the error, to synthesize the new sound with various sound sequences and meanings, and thereby to produce the new and standard configurations, the correct words.

If the student has not been convinced by this time of the urgent need for ear training as a prerequisite to speech-sound production, he will probably have to learn the same truth through sad experience with persistent error, frequent relapse, and slow progress. When articulatory cases are seen daily, it is customary to spend at least a week or two in intensive ear training before the student ever attempts to produce the correct sound. Most teachers and speech defectives hurry this part of the work. They are impatient to see actual results, to get to the correction of the speech errors, and because of this attitude they interfere with future progress. Adequate ear training is the best insurance for successful speech correction where articulatory and voice cases are concerned.

Types of ear training. The ear training should consist of definite exercises and activities fitted to the age, interests, and understanding of the speech defective. There are four main types of this ear training, and every one of the early

speech periods should include exercises of each type. The four types, with their distinguishing characteristics, are as follows:

Isolation—training in listening to sound sequences, nonsense words, or connected speech in order to detect the presence of certain sounds; training in isolating any sound, correct or incorrect, from its context; training in breaking up unitary speech-sound configurations into sequences of fairly independent sounds.

Stimulation—training which bombards the speech defective with a barrage of the correct sound.

Identification—training in identifying the characteristics of the correct sound and in identifying the characteristics of the error. No comparison is involved. The student learns the distinguishing traits of each.

Discrimination—training in comparing the correct sound with the error, in hearing the differences between the two sounds, and in recognizing the contrasts involved.

In the following paragraphs, we outline some of the techniques through which the four goals mentioned above may be obtained. Those cited are, of course, but a few of the techniques which may be used. Any worth-while teacher can and will invent others. Moreover, it is seldom necessary to use all of them with any one case. The medicine must be fitted to the symptoms. However, each case should be given an intensive course of ear training to convince the child that he has a speech defect and enable him to isolate, recognize, identify, and discriminate between the correct sound and the error.

Isolation techniques. We have pointed out that, as long as a sound is lost within a word, it cannot be heard or felt with any clarity. The word configurations must be broken up so that the correct sound can be heard by itself. One adult declared that he had sincerely tried to hear the sound that his teachers said he used incorrectly, but, when they pronounced the words, the part in which he was interested

was gone before he could perceive it. This adult could make the sound at will when he said it separately, but was unable to use it in familiar words. To the child speech defective, spoken words are lumps of sound. Indeed, he hears them as single sounds rather than as sound sequences. The older methods of teaching reading, in which children learned to sound out their new words, probably helped the articulatory cases much more than the new methods, which stress the acquisition of whole words. It is possible for an articulatory case to learn new word-wholes in which the correct sound is used, but it is much more economical, in terms of time spent in remedial work, to teach him to disrupt the incorrect word-wholes, to recognize the error, and then to integrate the correct sound into a sequence which is acceptable. He will then be much more likely to recognize his errors, and he will be able to master new words by himself.

A few illustrative exercises in isolating sounds from their contexts may be given. The individuals concerned were lingual lisps—hence the use of *s* as the sound illustrated. Any other sound may be used in the same exercises, and many other similar exercises may be easily invented.

Sample isolation techniques for children.

1. The teacher hides, in different places about the room, nine or ten pictures of various objects, one of which begins with the *s* sound. The moment the child finds this picture, he can run back to the teacher and ring a bell.

2. The teacher gives the child an old catalogue and a pair of scissors. A box is shown the child, and he is told that when he gets five pictures whose names begin with the *s* sound and one picture whose name ends with that sound, he can open the box and have what is in it. He does so and gets the jelly bean.

3. The child is covered with a bath towel and told to play Jack-in-the-box. The teacher tells him that she has three funny word-keys, only one of which will open the box. The word key that fits has the *s* sound in it. The child is to jump and throw

off the towel and say *boo* when the teacher uses the proper key. The three keys are nonsense words or sound sequences such as "mo-bo-to-pay," "ka-pa-la-tha," and "ro-ssso-fa-ta." The length of the nonsense word-key and the location of the *s* sound within the word may be varied to fit the needs of the child. Word-keys may be simple monosyllables at first.

4. The teacher arranges five boxes on a table and tells the child that she is going to put a word in each box. He is to watch and point to the box in which there is a word with an *s* sound in it. The teacher may use word lists first and then progress to interesting sentences.

5. The teacher sounds out words and asks the child to locate the appropriate picture, putting all s-word pictures in a special envelope.

Sample isolation techniques for adults or older children.

1. Student reads silently, underlining all *s* sounds (not only *s* letters). He reads the passage and notes how many he missed in silent reading.

2. The teacher and student read from the same material (or recite sentences previously agreed upon), the teacher omitting all s sounds and the student speaking them, or in the earlier stages, the student reading and omitting all s sounds and the teacher speaking them. Thus:

Student: Thi . . can . . certainly run fa . . t. ss

Teacher: ss ss should make a list of words

3. The student should make a list of words in which the *s* symbol refers to some other sound (as in measure or his), and also a list of words in which other symbols are sounded as *s* (ice, extra).

4. The student should talk while having pencil and paper before him, writing the symbol *s* each time it occurs in the teacher's speech. This can also be done for each time it occurs in his own speech.

5. Pause for a count of five after each occurrence of the correct or incorrect s sound in his speech. Repeat, pausing prior to the sound.

6. Teacher stimulates student by omitting, prolonging, or repeating *s* each time it occurs. Use reading material in which the *s* sounds have previously been underlined.

Stimulation techniques. It is not sufficient to isolate and identify the correct sound during the preliminary period of ear training. The student must be stimulated with the sound so thoroughly that it may almost be said to ring in his ears. Every available agency should be used to provide this stimulation. Parents, friends, and classmates can help. Through various devices, the speech defective's attention to the sound must be focused and heightened. He must become aware of it not only in isolation but also as it occurs within spoken words. If there is any law governing speech acquisition, it is the law of adequate stimulation.

Obviously, many of the techniques used in isolating the correct sound may be modified to provide adequate stimulation. The adult should be required to listen carefully and discriminatingly to variations in intensity and rhythmic presentation of the stimulus. He can be required to write the symbol simultaneously with the teacher's utterance. He may signal his perception of the presence of the sound within a jumble of nonsense material. Phonograph recording may be used, and so also may such tongue-twisters as "Sally sold silk and satin at the store on Saturday." The student, of course, does not pronounce these sentences. This is the period for ear training. He merely listens, or writes from dictation.

A correct attitude on the part of the speech defective is of the utmost importance to the success of this auditory stimulation. Koeppe-Baker¹ gives this advice to his adult articulatory cases:

When your clinician produces the sound, over and over again, for you, it is highly important that you pay the strictest attention. This listening must not be a passive act, but a highly active one. You must be listening—not just sitting. It would be much the same kind of listening you would do if you were studying a piece

¹ By permission of the author, from *A Handbook of Clinical Speech*, pages 346-347, Vol. 2. Ann Arbor, Edwards Bros., 1936.

of music being played by an orchestra or single performer, to determine the nuances, variations, and subtleties of execution. Should you grow tired, inattentive, or disinterested, tell the clinician at once, for auditory stimulation is of value only when you are fully participating in the process of listening.

As you listen, try to determine exactly in what way the sound which you are hearing differs from all other sounds of speech and in what way it is like them. Remember that your ability to detect the slight differences in sounds which give them their identity will develop slowly. At first you will hear nothing of any significance. *As you learn to listen discriminately*, you will discover much you have missed before.

Do not be misled by the fact that your clinician *seems* to be doing all the work during the auditory stimulation period. His part is relatively simple and makes no great demands of him. On the other hand, your task of actively listening far transcends his in importance. All that really happens occurs in you. What you do during these stimulation periods determines the extent of any improvement to occur in your speech habits. Psychologically, the most important thing which will ever happen during your speech training is happening as you listen. Don't be fooled. Listening is hard work—and of greatest importance.

The coöperation of adults may usually be enlisted by such direct reasonable appeals, but younger children must be motivated to listen by the interest inherent in the activity itself. It is always wise to call for some type of performance to indicate the efficiency of the student's reception of the stimulation.

Sample stimulation techniques for children.

1. Procure a calendar mailing tube or similar device. Hold one end to child's ear as he winds a string upon a spool. The moment the teacher stops making the sound, he must stop winding.
2. The teacher, parents, or classmates act as animals, machines, or objects which produce the sound. The child may be asked to tell a story in which these objects are mentioned, and, whenever he mentions them, the teacher makes the sound. Little dramas may be invented in which the child, for example, pretends

to be an automobile with a flat tire in need of air, and the teacher is the station attendant who fills the tire with hissing air.

3. Certain objects are set aside as demanding the hearing of the correct sound before they can be touched. Such rituals appeal to children and compel attention.

4. A secret signal is arranged between the child and the parent or teacher. Whenever the child makes it, the parent or teacher must respond by a prolonged *s* sound.

5. A certain room in the home is set aside as a room which the child cannot enter until he knocks three times and hears the *s* sound.

6. Alliterative sentences using the correct sound in the initial position of most of the words are used as commands or requests. The child performs the activity.

7. Nursery rhymes, jingles, and even tongue twisters may be read to the child.

8. One minute of each hour is set aside as the *s* minute. Some associate of the child must pronounce the sound for a full minute. The child or teacher records the time in a little book.

Sample stimulation techniques for adults or older children.

1. The teacher prolongs or repeats the correct sound, using variations in rhythm or intensity. The student follows the type of stimulation by drawing a continuous line or separate lines on a sheet of paper, using dips to indicate decreases in intensity and crests to show increases. Rhythms may be indicated by spacing.

2. Phonograph records which carry variable durations of the correct sound can be played. The student is requested to time each of the durations until he makes a perfect score.

3. The teacher dictates to the student, prolonging all the *s* sounds.

4. The teacher holds a conversation with the student, interjecting the correct sound between all words.

5. Two students, one of whom is the lisper, sit side by side, with their eyes closed. The teacher produces a prolonged *s* sound as she slowly walks away from them. They indicate by raising their hands when they can no longer hear the sound.

Identification techniques. As we have said, it is necessary to make the correct and incorrect sounds very vivid

if the child is to learn to discriminate them in his own speech. The techniques for isolating and recognizing the sounds do a great deal toward this end, but they need to be supplemented by other methods which give the sounds their identities or personalities. This identification is largely a process of observation of the sound's characteristics, in terms of both audition and mechanics. It is also a process of association.

The correct sound and the error, each by itself, must come to have an individuality and an identity. Many people fail to realize that before we can have discrimination we must have identification. All good teachers of speech correction give personalities to the sounds with which they work. They give them names, traits, and even faces. From such identification comes recognition; from recognition comes discrimination; from discrimination comes success.

Sample identification techniques for children.

1. It is always well to begin the identification by giving names to the correct and incorrect sounds. These names are frequently those of objects which make noises similar to that of the sound in question. Thus *th* is called the windmill sound; *s*, the snake or goose sound; *ch*, the train sound; *r*, the growling-dog sound; *k*, the coughing sound; *f*, the spitting-cat sound. Many others are easily invented, for literalness is not nearly so important as repetition of the name.

2. Many teachers of speech correction find it advisable to give faces to certain sounds. These may be drawn on cards and used for stimuli. The faces can illustrate some of the more simple mechanics of making the sound. Thus *f* has a face with the upper teeth biting the lower lip; *s* is smiling; *th* is barely protruding a very red tongue; *l* seems to be looking for peanut butter, with his tongue exploring the roof of his mouth. Mirror work also helps a great deal.

3. It is wise to associate the sound with a symbol, either in script or printing. Children readily understand that the snake sound looks like a snake, and that it is entirely natural for the

sound with the lip-biting face to wear a sweater bearing the monogram "F." Hiding cards with such symbols around the room and requesting the child to find them, during which time the teacher keeps repeating the sound, will prove very useful. So also will be the technique which calls for the child to pick out the symbol, whose sound the teacher speaks, from a pile of cards.

4. Little stories, frequently repeated, about the sounds will often produce associations which will help identify them. No one can tell just what will best identify the sound for any one child, but once the child shows a clear and strong reaction of emotion or curiosity, that association should be remembered.

5. It is not well to get too many traits associated with any one sound. Not the number of traits, but their pertinence, inter-relationship, and contrast to the traits of the error give them their value. It is important that the teacher work for close coördination of the associations with any one sound. The sound of *s* should bring to mind immediately the snake, the symbol, the smile, and the story of how the snake hissed when the filling station man turned the air hose on him. It should also bring to mind that the little red tongue is never between the teeth as it is with the *th* sound.

Sample identification techniques for older children and adults.

1. Identification for the adult can also be enhanced by giving names to the correct and incorrect sounds. Thus for one adult lateral lisper, the correct sound was always referred to as the "whistled hiss," while the incorrect one was called the "old sloppy shush." Derogatory adjectives which need not be truly descriptive are often used. The auditory characteristics of the sound also may give rise to the names used. Consequently, we speak of the "high-pitched" and "low-pitched" *s* sounds, the "whispered *f*," and the "sounded *v*." They may also be identified by names descriptive of the shape of the lips, the position of the tongue, or the use of the nasal opening. The teacher should always bestow some name on both correct and incorrect sounds. Other traits and characteristics of the sound are thereby given a nucleus about which to cluster.

2. Phonetic diagrams, palatograms, and models of the articulatory positions characteristic of the correct sound and the error

may be used as identifying agents. The student should be examined in his production of the incorrect sound, and his performance should be described in detail. He should examine the teacher's mouth as the teacher produces the correct sound and the error. Observation in the mirror is also useful. A tongue depressor may be inserted within the mouth to probe and investigate tongue positions. A slender-handled throat mirror may be employed for those sounds in which access to the speech organs is difficult. From all these data, the student should finally attain an integrated picture of what the teacher does when she makes the correct and incorrect sounds. It is often wise to insist that the student write out a complete description of this picture. Even though phonetically accurate descriptions are not obtained, the procedure has identification value.

3. Since adults and older children have associated incorrect sounds with the printed or written symbols, it is often necessary to use nonsense symbols to represent the new sound. All of the characteristics of the correct sound should be associated with this rather than with the old symbol. The student must be taught that his task is to learn a new sound rather than to change an old one, that the new sound has characteristics that he must discover, and that, for the time being, he should use a new symbol to represent this new sound. Typical nonsense symbols for several of the speech sounds will be found in the section of this chapter concerning methods for strengthening new sounds.

Discrimination techniques. The final step in ear training is that of discrimination, and, if the preceding types of ear training have been carried out, it should not be difficult. In its essence, it consists of comparing and contrasting the correct and incorrect sounds, both in isolation and in incorporation within regular speech. Selecting, matching, and signaling techniques are used. They are employed even when the student discriminates successfully, for the practice is valuable in itself.

These discrimination techniques frequently call for an ability which many untrained teachers do not possess—the ability to mimic or produce a reasonably accurate imitation of the student's error. While such substitutions as *f* for *v*

or *t* for *k* make no great demands upon the teacher's histrionics, the imitation of a lateral lisp, dark *l*, or guttural *r* often present great difficulties. Nevertheless, the teacher may be assured that a little practice will soon bring about an approximation so close to the student's error that it will serve well enough for the usual discrimination exercises. In a sense, all preceding steps are pointed at facilitating this auditory discrimination, for it is the essence of the necessary ear training of which we hear so much. Without the ability to differentiate correct sound from error, the student becomes discouraged, the treatment becomes blind drill, and the teacher wishes she had taken up library work.

Sample discrimination devices for children.

1. *Selection.* Show the child an object such as a cake of soap. After a short review of the identifying characteristics of the correct sound and error, the teacher pronounces a series of isolated sounds or nonsense syllables, such as *k*, *p*, *th*, *s*, *f*, *r*, *n*, *s*, *f*, *th*, and requests the child to hand her the object when he hears the sound that starts the word when it is made correctly, but to hide it when he hears the sound that starts it when it is made incorrectly.

2. *Selection.* The teacher and student begin the game with ten toothpicks each. The teacher holds up a series of pictures, one at a time, pronouncing the name of each. In naming one of the pictures she uses the child's error. If the child recognizes it, he can demand the picture and one toothpick. If he fails to recognize it, he loses a picture and toothpick.

3. *Matching.* The teacher produces two sounds, declaring that they begin words which name objects in the room. The student is required to find three objects for each sound.

4. *Matching.* The child is blindfolded and sits with his hands outstretched on the table in front of him. He is allowed to pull only one hand away at a time. The teacher names one hand as possessing the correct and the other hand as possessing the incorrect sound. She then pronounces the sound name of one of the hands, rapping it lightly with a pencil as she does so. This helps to speed discrimination and the children enjoy it.

5. *Signaling.* The teacher asks the child to ring a bell and to rap the teacher's hand whenever the teacher uses the wrong sound. The teacher then tells a story, occasionally using the error. After every signal the teacher repeats the word correctly.

6. *Signaling.* The teacher reads a list of 5 words with her back turned to the child. The moment the child signals, she must pronounce the next word using the incorrect sound. If she fails, the child gets some small reward.

Sample discrimination devices for older children and adults.

1. *Selection.* The teacher tells the student that she will pronounce a series of thirty isolated sounds, some of which are correct and some incorrect. The student is given a sheet of paper on which the thirty numbers are printed and is asked to encircle those numbers in the series on which the teacher used the correct sound. The teacher then pronounces the sounds and checks up on his discrimination.

2. *Selection.* The teacher pronounces three nonsense words such as "pa-sa-no-see." She tells the student that each word will contain either two correct sounds, two incorrect sounds, or one correct and one incorrect sound. She teaches the student to recognize the three types, then dictates ten or twenty of them, which he is to write phonetically or in any way he wishes, classifying them according to type.

3. *Matching.* Using the symbols taught the student in the identification exercises, the teacher dictates a list of words, occasionally using the error. The student is asked to write down the symbol corresponding to the sound used.

4. *Matching.* The teacher slowly reads a newspaper article, occasionally using the student's error. The student is asked to name each correct and incorrect sound which is used, using the names taught in the identification exercises. He must interrupt the teacher to do this naming.

5. *Signaling.* The student is asked to raise his right hand the moment he hears the correct sound and to raise his left when he hears the error. The teacher pronounces a series of nonsense syllables, slowly at first, but with a gradual increase of speed.

6. *Signaling.* The teacher reads tongue twisters, occasionally using the error. The student is asked to rap on the table the moment he hears the error. If his response does not occur until after the teacher has said the next two words, he has failed. The procedure is continued until he collects five successes.

Besides these selecting, matching, and signaling devices, it is advisable to use a little direct comparison of the right and wrong pronunciations of common words, whether one is working with children or adults. Some such sequence as this is used: The teacher imitates the child as he says the word. Then the child says it. The teacher points out the similarity. Then the teacher says it correctly and very clearly, pointing out the contrast. The contrasts and similarities are put in the identifying terms previously used.

Methods for Teaching a New Sound

After the speech defective has been given a well-planned and thorough course of ear training, during which he has made no attempt to produce the correct sound, he is ready for the next step. The goal of this next step is the ability to make the correct sound by itself and apart from its usual context in familiar words. Remedial work must be continued until he can make the sound whenever he wishes. He must be able to produce it consistently and at will. There are a great many methods whereby a new sound can be taught: the stimulation method, the phonetic placement method, the modification of other standard sounds or bio-logical functions, the babbling method with identification of chance production of the sound, and the method which uses a few words or imitative sounds in which the usually defective sound is made correctly. Each of these will now be described in detail.

Stimulation method. This method, which is the simplest and easiest of them all, depends upon the preliminary ear training for its value. It should be tried first, for a sound

taught by this method is much more stable and permanent than a sound acquired by one of the other methods. In a sense, it may be said that this is the natural method of sound acquisition. The baby hears and discriminates sounds. He is stimulated intensively by them. He listens. Then he makes the attempt, and lo!—he has produced the correct sound. In a similar fashion, when the teacher feels that the student has been given adequate ear training, she goes through a brief review of some of the isolation, identification, stimulation, and discrimination techniques and concludes with a request similar to this:

Teacher: "Now, Johnny, I'm going to let you have your first chance to make the snake sound, *sss*. Remember not to make the windmill sound, *th-th*. This is the sound you are to make: *sss, sss, ssssss*. Now you try it."

If the ear training has been adequate, this simple routine, in which the wrong sound is pronounced, identified, and rejected, then followed by the correct sound given several times, will bring a perfect production of the correct sound on the very first attempt. Occasionally it will be necessary to repeat this routine several times before it works, and the student should be encouraged to take his time and to listen carefully both to the stimulation and to his response. He should be told that he has made an error or that he has almost made it correctly. He should then be encouraged to attempt it in a slightly different way the next time. No pressure should be brought to bear upon him, and a review of discrimination, stimulation, and identification techniques should preface the new attempt. He should be asked to make it quietly and without force. The procedure may be slightly varied by asking the child to produce it in a whisper. After the sound has been produced, the teacher should signal the child to repeat or prolong it and to sense the "feel" of it. The attempt should be confined to the isolated sound itself or to a nonsense syllable beginning with it.

This stimulation method will produce excellent results in all but a very few cases, and it should always be tried thoroughly before the other methods are used.

Phonetic placement method. The phonetic placement method of enabling a speech defective to produce a new sound is the old traditional method. For centuries, speech correctionists have used diagrams, applicators, and instruments to ensure appropriate tongue, jaw, and lip placement. Children have been asked to watch the teacher's tongue movements and to duplicate them. Observation of the teacher's mouth in a mirror has also been used. Many very ingenious devices have been invented to adapt these techniques for children, and very often they produce almost miraculous results. Unfortunately, however, the mechanics of such phonetic placement demand so much attention that they cannot be performed quickly or unconsciously enough for the needs of casual speech. At best, they are vague and difficult to sense or recall. The positions tend to vary with the sounds which precede or follow them, and to teach all of these positions is an almost impossible task. Frequently dental abnormalities will make an exact reproduction of the standard position inadvisable. Many speech correctionists produce the sounds in nonstandard ways, if, indeed, there is a standard way of producing any given speech sound. Despite all of these disadvantages, the phonetic placement methods are indispensable tools in the speech correctionist's kit, and, when the stimulation method fails, they must be used. They are especially useful in working with individuals with hearing defects, and they certainly help to identify the sound.

Excellent diagrams and descriptions of the various speech sounds may be found in the texts by Koepp-Baker, Mosher, Borden and Busse, and West, Kennedy, and Carr, to which references are given at the end of this chapter. The speech correctionist should have these texts available and should

know the mechanics of articulation thoroughly enough to interpret the diagrams and assume the positions illustrated and described. The teacher should be able to recognize any sound from its description and diagram.

In using methods of phonetic placement, it is necessary that the speech defective be given a very clear idea of the desired position prior to speech attempt. If an adult, he should study diagrams, the teacher's articulatory organs in position, when observed both directly and in a mirror, palatograms, models, and the written descriptions of the mechanics whereby the sound is produced. Every available device should be used to make the student understand clearly what positions of tongue, jaws, and lips are to be assumed. It is frequently advisable to have the student practice other sounds which he can make easily, using diagrams and printed descriptions to guide his placement. This will familiarize him with the technique of translating diagrams and descriptions into performance.

Various instruments and applicators are used to help the student attain the proper position. Tongue depressors are used to hold the tip and front of the tongue down, as in the attempt to produce a *k* or *g*, or they may be used to touch certain portions of the tongue and palate to indicate positions of mutual contact. Tooth props of various sizes will help the student to assume a proper dental opening. Thin applicators and wedges are used to groove the tongue. Curious wire contrivances are occasionally used to insure lateral contact of tongue and teeth. Small tubes are used to direct the flow of air. The texts by Borden and Busse and by Scripture provide examples of these instruments. In our experience, they are more dramatic than useful. Enforcing a certain tongue position through some such device produces such a mass of kinesthetic and tactual sensations that the appropriate ones can seldom be attended to. Usually the moment the instrument is removed, the

old, incorrect tongue position is assumed, because, as Travis² puts it:

If a child used *p* for *f* from pressing the lips too tightly together, a thick stick or finger was stuck between the lips so that they could not close tightly. As far as the child is concerned, he is still making *p* regardless of whether a stick or finger was stuck between the lips or not. A sound cannot be broken up into its component parts, as into lip movements or tongue movements. It is a unit, a whole, and can be learned only as such.

If these devices and instruments have any real value, it seems to be that of vivifying the movements of the tongue, and of providing a large number of varying tongue positions, from which the correct one may finally emerge. Many individuals have difficulty in realizing how great a repertoire of tongue movements they possess, and instruments frequently enable them to attempt new ones.

Tongue exercises. The same result may be attained through various articulation exercises. Although the value of tongue, lip, and jaw exercises has been questioned and denied by many workers in the field of speech correction, they can be said to be useful in teaching the student to manipulate his articulatory apparatus in many new and unaccustomed ways. Too many articulation cases have only one or two stereotyped tongue movements in their speech repertoire, although they may have many more in their functions of swallowing, laughing, chewing, or sneezing. They need to learn how adaptable the tongue really is. Whenever possible, the articulatory exercises given should proceed out of the movements used in the biological functions or in babbling. The old, formal tongue exercises are of much less value. The speech correctionist should use the references at the end of this chapter to collect a good group

² Travis, L. E., *Speech Pathology*, page 193, New York, D. Appleton-Century Co., 1931.

of articulation exercises. Those by West, Kennedy, and Carr, and by Heltman are most valuable for adults, and those by Wood and by Case and Barrows are best for children.

When the correct sound has been produced (and frequently a lot of trial and error must be resorted to before it appears), the speech defective should hold it, increasing its intensity, repeating it, whispering it, exaggerating it, and varying it in as many ways as possible without losing its identity. He should focus his attention on the "feel" of the position in terms of tongue, palate, jaws, lips, and throat. He should listen to the sound produced. Then he should be asked to leave the position intact but to cease speech attempt, resuming it after a long interval. Finally he should let the tongue assume a neutral position on the floor of the mouth and then attempt to regain the desired position. Sounds produced by phonetic placement are very unstable and must be treated very carefully or they will be lost. Strengthen them as soon as possible and keep out distractions. After a successful attempt, one should insist that the student remain silent for a time before taking part in conversation. This will permit maturation to become effective.

Modification of other sounds. Another special method of teaching a speech defective a new sound is that which involves the modification of other sounds, either those of speech, those which imitate noises, or those which imitate other functions, such as swallowing. These methods are somewhat akin to those of phonetic placement, but they have the advantage of using a known sound or movement as a point of departure for the trial-and-error variation which produces the correct sound. There are many forms which the modification method may take, but in all of them the sequence is about the same. The student is asked to make a certain sound and to hold it for a short period. He is

then requested to move his tongue or his lips or jaws in a definite manner while continuing to produce his first sound. This variation in articulators will produce a change in the sound, a change which often rather closely approximates the sound which is desired. An illustration of this method may be given. A lateral lisper is told to make the *th* sound and to prolong it. Then, while continuing to make the sound, he is required to draw in the tongue tip slowly and to raise the whole tongue, slowly scrape its tip upward along the back of the upper teeth, and finally bring it to rest against the alveolar ridge. The *th* sound will change as the tongue rises, and a rather good approximation to the desired *s* will be produced. If this is combined with ear training and stimulation, it will be found to be very effective.

There are a great many of these modification methods, and each speech-correction teacher invents others. The student should go through the references given at the end of this chapter and collect examples appropriate to each of the commonly defective sounds for his notebook. The text by Nemoy and Davis is especially useful in this regard. Most of these techniques have been used by all speech correctionists for decades, and they are part of the standard equipment of any worker in the field.

As in the phonetic placement methods, there are many disadvantages in using this method, since the sounds produced are very unstable and easily lost. The student has difficulty in initiating them quickly and in making transitions from them to other sounds. They should always be reinforced by intensive ear training and stimulation.

The babbling method. This method for producing the desired speech sound is probably as close as any of the methods to the one used by the child in learning to talk. Its greatest disadvantage is its lack of economy, for much time is needed to teach the student to throw off his inhibi-

Thus the lingual lisper who could say *lips* correctly repeated the word one hundred times, prolonging the *s*. He was then asked to hold it for a count of twenty, then thirty, then forty. Finally, he was required to hold it intermittently, thus; *lipssss.ssss.sss*. The purpose of such a gradual approach is that the sound must be emphasized in both its auditory and its motor characteristics to prevent its loss when the student becomes aware of it as his hard sound. For example, one baby talker made the initial *r* in *rabbit* perfectly until told that he did. Immediately the child changed to the *w* substitution, and was unable to make the initial *r* again.

After the child has emphasized the sound a large number of times, has listened to it and felt it thoroughly, and can make it intermittently and in a repetitive form, he may be asked to think the word and to speak the sound. It is often wise to underline the sound to be spoken, asking the student to whisper all but the letter underlined. Other sounds and other words may be similarly underlined if a careful approach is necessary. Through these means, the child finally can make the sound in isolation and at will.

Strengthening the New Sound

One of the greatest causes for discouragement in treating an articulatory case may be traced to the parent's or teacher's ignorance of a very important fact. A new sound is weak and unstable. Its mechanics are easily forgotten or lost. Its dual phases of auditory and motor sensation patterns are easily confused. Many people believe that a complicated skill (such as that involved in a speech sound) once achieved is never lost, although any musician or tennis player will tell us that a new stroke or fingering sequence must be practiced and strengthened a great deal before it can be used in competition or composition. Many speech-correction teachers become discouraged and blame the

Speech defectives need some standard with which to compare their speech attempts at correct production of the usually defective sound. Although occasional cases are found who never make the sound correctly, the majority of speech defectives have a few words in which they do not make the error. The teacher should be alert enough to catch these when they do occur. Often these words are those which have the usually defective sound in an inconspicuous place—that is to say, the sound occurs in the medial or final position, or is incorporated within a blend; seldom is it found in an accented syllable. The teacher must train her ear to listen for it in the student's speech or it will escape her. At times it occurs in words in which an unusual spelling provides a different symbol for the sound. To illustrate, a child who was unable to make a good *f* in any of his words using that printed symbol, said the word *rough* with a perfect *f* sound. This was probably due to the strong stimulation given by the child's spelling teacher.

These words are worth the trouble needed to discover them, for they simplify the teacher's work tremendously, since it is possible to use that sound as a standard and guide and to work from it to other words in which error normally occurs. The experienced teacher greets these nuclei words as veritable nuggets. Similarly, even when the student is highly consistent in his errors, there comes a stage in his treatment when he is saying a few words correctly. These words may be used to serve the same ends as those mentioned in the preceding paragraph.

The procedure used in this method is roughly as follows: The teacher writes the word on one of several cards (or uses a picture representing it). Then she asks the student to go through the series one at a time, saying the word on each card ten times. Finally, the special word to be used is repeated a hundred times, accenting, and prolonging if possible, the sound which in other words is made incorrectly.

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speech defective for his frequent relapse into error or his sudden loss of the sound he had been taught to make. Many children who can make the correct sound at will never learn to incorporate it within familiar words. All of these unfortunate occurrences are due to the fact that a new sound must be strengthened before it can win the competition which the error provides in the speaking of common words. A lisper who has said "yeth" for "yes" several thousand times cannot be expected to say the latter as soon as he has learned to make the *sss* sound in isolation. Perhaps that sound has been performed only three or four times. Yet parents and teachers constantly ruin all of their preliminary work by saying some such sentence as this: "Fine, Johnny. That was fine! You said *sss* just as plainly as anyone. Now say 'sssoup.'" And Johnny, ninety-nine times out of one hundred, will say triumphantly, "thoup." Most speech correctionists have to train themselves to resist this urge to hurry. When the child has been taught to make the new sound, the utmost patience and restraint are needed. Careful strengthening of the sound will pay dividends in progress, and it is wise to practice the sound in nonsense material for some time even with those cases who can make a quick transition to familiar material. Otherwise, certain sound combinations will always present trouble. If there is one principle in speech correction more important than any other, it is this: strengthen every new sound before it is used in familiar words.

There are two main types of techniques used for strengthening a new sound: those using the sound by itself, in isolation, and those using the sound in nonsense material. Included under the first classification are prolongation, repetition, exaggeration, attending to kinesthesia, shortening initiation time, inclusion in babbling, and simultaneous talking-and-writing. Included in the second classification are the methods which use nonsense syllables, symbols, and

names, and those which employ signal practice and other transitional techniques. Although no one case will ever require all of the techniques, we will describe some of them under each heading. All cases should be given some strengthening technique of each type.

Techniques for strengthening the new sound in isolation. In general, it is advisable to use these techniques before those employing nonsense material. As we have said, after the new sound has been obtained, it should be repeated and prolonged immediately. During this repetition and prolongation, the student should be told to keep a poker face and to move as little as possible. A sudden shift of body position occasionally produces a change in the movements of articulation as well. As soon as the new sound tends to lose its clear characteristics, the teacher should insist upon some rest and should then review the procedure used to produce the sound. Rest should be silent in order to let maturation take place. Little intensity should be used, and when working with a pair of sounds, such as *s* and *z*, the unvoiced sound is preferable. Often sounds such as *l* and *r* should be whispered or sung.

After the speech defective is able to produce the sound readily and can repeat and prolong it consistently, the teacher can ask him to increase its intensity and exaggerate it. He should be asked to focus his attention on the "feel" of the tongue, lips, and palate. Shutting his eyes will help him to get a better awareness of the tactual and kinesthetic sensations thereby produced. Ask him to assume the position without speech attempt and, after a short period of "feeling," to try the sound. Many other supplementary devices will occur to the teacher.

After the student reaches the stage where he has little difficulty in producing the new sound, he should be encouraged to shorten the time needed to produce it. A sound which the student takes too long to produce will never be-

come habitual. This speeding up of the time needed to initiate it may be accomplished by demanding fast repetitions, by alternating it with other isolated speech sounds, and by using signals. In this last activity, the student should keep his articulatory apparatus in a state of rest or in certain other positions, such as an open mouth, and then, at a certain sharp-sound signal, he should react by producing the new sound immediately.

One of the most effective methods for strengthening a new sound is to include it in babbling. The babbling should be initiated in the manner described in the last section, and the student should attempt to incorporate the new sound within the vocal flow as effortlessly as possible. It should not stand out and there should be no pausing before it. Doublings of the sound should be frequent. These babbling periods should be continued daily throughout the course of treatment.

The most important of all strengthening devices is the use of simultaneous talking-and-writing. In this procedure, the student writes the script symbol as he pronounces the sound. The sound should be timed so that it will neither precede nor follow the writing of the symbol, but coincide exactly with the dominant stroke of the letter. Since this dominant stroke varies somewhat with different persons, some experimentation will be needed. At first, the teacher should supervise this talking-and-writing very carefully to insure clear vocalization of the new sound and proper timing. Later, the student can be assigned to hand in several pages of this talking-and-writing every day. The continuant sounds should be pronounced by themselves (*sss, vvv, lll, mmm*), and the stops should use a lightly vocalized neutral vowel (*kuh, puh, duh*). Simultaneous talking-and-writing not only provide an excellent vehicle for practice of the new sound, but also give a means of reinforcing it by enriching the motor aspect of the performance.

They also improve the identification, and, as we shall see, make possible an effective transition to familiar words. For children who cannot write, the sound may be tied up with a movement such as a finger twitch or foot tap. In this case, as in writing, the timing is very important.

Strengthening the new sound through use of nonsense material. The second group of strengthening techniques includes those which use nonsense syllables, symbols, and names. It is obvious that such material provides a very effective means of practicing the new sound in all of its various combinations with other sounds. The student meets none of the competition which the error produces in speaking familiar words. He need not add to the speech attempt the burden of rejecting the error. Fewer confusions arise. New sound sequences are strengthened, and new articulatory coördinations are learned.

The first type of nonsense material to be considered is the nonsense syllable. These syllables can be readily constructed by combining the new sound with the fourteen most common vowels and diphthongs. The first nonsense syllables to be practiced are those in which the transitional movements from consonant to vowel involve the fewest and simplest coördinations. For example, *ko* involves less radical transitional movements than does *kee*. The next nonsense syllables should be those which use the new sound in the final position (*ok*), and, finally, those in which the new sound is located in the medial position (*oko*) should be practiced. Double nonsense syllables may also be used, but simple doublings are preferred (*kaka*). Much practice of these nonsense syllables is necessary before familiar words are attempted.

These nonsense syllables should be practiced thoroughly. The talking-and-writing techniques can be used to facilitate their production if any difficulty is experienced. The student should speak the new sound as he writes the symbol

it is wise to use a nonsense symbol in place of the standard letter. In general, the symbols should be parts of the standard symbols, though the student should not realize this fact until later. These symbols should be used for identification techniques and for all strengthening techniques. After the student has finally begun to use them in regular words, he may be shown that the nonsense symbol is really a part of the true symbol for the sound.

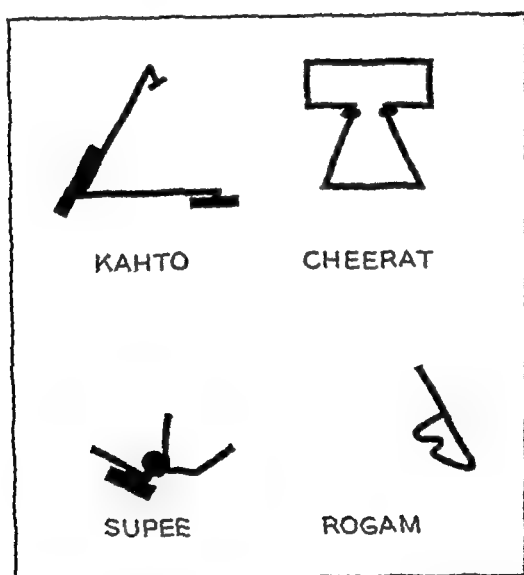


Fig. 17. Nonsense pictures used to provide names which children with articulatory defects can learn to pronounce more easily than familiar words.

It is also advisable to use nonsense names and meanings to provide new words in which the new sound can be incorporated. The fingers and toes may be given nonsense names. The doorknob may be christened. The teacher can make nonsense objects out of modeling clay, giving them names which include the new sound. Nonsense pic-

tures may be drawn and named. Card games using these nonsense pictures seem to be peculiarly fascinating to almost all cases. Through talking-and-writing techniques, repetition from a model, reading, conversation, questioning, and speech games, these nonsense names can be used repeatedly. The various sound combinations are thereby practiced, and remarkable progress will soon occur. Examples of some of the nonsense pictures are given in the accompanying illustration.

Making the Transition to Familiar Words

After the new sound has been strengthened sufficiently, the speech defective may attempt to use it in familiar words. If the preliminary work has been done carefully, there will be little difficulty, even though this is probably the most difficult and critical stage of the whole treatment. The teacher must always keep in mind that the speech defective has said these words in the wrong way thousands of times, that these words are units which include the error as a part of them. In retraining, we do not merely substitute one sound for another. We build new words, new configurations. The student must unlearn the old and learn the new. This process involves a great many techniques, among which the following may be cited: training in reconfiguring, signal practice, transitional techniques, and talking-and-writing.

Reconfiguration techniques. Frequently the reconfiguring techniques must be carried out rather gradually. Their purpose is to teach the individual that words are made up of sound sequences and that these sound sequences can be modified without losing the unity of the word. If, for instance, we use a lingual lisper as our example, the reconfiguring techniques would follow somewhat the same sequence: (1) The student reads, narrates, and converses with the teacher, substituting the sound of *b* for that of *f*

whenever the latter occurs in the initial position. He reads, for example, that "Sammy caught a bish with his hook and line." The purpose of using these nonerror sounds is to make a gradual approach. (2) The student substitutes his new sound for other sounds, but not for the error. Thus: "Sammy sssaught a fish with his hoos and line." (3) The student substitutes another sound for the *s* in the same material. Thus: "Bammy caught a fish with his hook and line." (4) The student omits the *s* in all words beginning with it. Thus: "—ammy caught a fish with his hook and line." (5) The student "substitutes" his new sound for the *s*. Thus: "Ssssammy caught a fish with his hook and line." Many other similar techniques are easily invented. It may seem to the young speech correctionist that such techniques are far too laborious and detailed. But, after he has met with persistent error in his articulatory cases, he will appreciate the fact that careful and thorough training will produce a thoroughgoing and permanent freedom from error. Sketchy and slipshod training will enable a speech defective to make the correct sound and perhaps to use it in a few words when he watches himself carefully, but this is far from the goal which should be set. Too many speech-correction teachers have blamed the student for failure when they should have blamed themselves.

Signal practice. There are several other methods of getting the student to use the new sound in familiar words, but one of the most effective may be called signal practice. In this, the student prolongs or repeats the new sound and then, at a given signal, instantly says the prearranged vowel or the rest of the word. The student should be given a preparatory set to pronounce the rest of the word by preliminary signal practice. During this practice he waits with his eyes closed until he hears the sound signal which sets off the response. Thus, during the student's prolonga-

tion of *ssssss*, the instructor suddenly raps on the table, and the syllable *oup* is automatically produced. With a preparatory set, the response is largely automatic and involuntary, and thus the new sound is integrated within the word as a whole. Often it is wise to require the student to say the word twice. Thus: *ssssss(rap)oupsoup*. Signal practice can also be used with repetition. Thus: *kuk-kuk-(rap)atkat*. After some training with this type of signal practice, the student may use other signals, such as those provided by the timing of a rhythm. Thus: *s-s, s-s-soup* or *s-s-soup, s-s-soup*. The student may also be required to repeat over and over some nonsense syllable which he can make well, suddenly saying the new word when the signal is given. Thus: *ssi-ssi-ssi-ssi (rap) sssip*. The nonsense syllable and the new word may also be used alternately. The isolated sound may be used in the above exercises in place of the nonsense syllable. Various other combinations may easily be invented.

Simultaneous talking-and-writing. The simultaneous talking-and-writing techniques previously described will be invaluable if used properly. The student should talk-and-write the symbol alone for one line, and then, on the next line, talk-and-write the first letter, the first syllable, and, finally, the whole word. Thus: *s s s s s s s s s; s si sick s si sick*, and so on. Later he can alternate the symbol and the word, and finally he can write only the symbol as he says the word. Assignments can be given for home practice. Frequently such a gradual approach is not necessary, and the student need write only the symbol and say any *s*-word.

At times, difficulty will be experienced in making the transitions into the words. The student will say *rwabbit* and be confident that he has pronounced the word correctly. The error must be brought to his attention by the teacher's imitation and by the student's voluntary produc-

tion of the error. Signal practice will help a great deal to eliminate this error. Another invaluable technique is provided by a signal used in a slightly different way. The student is asked to form his mouth for the vowel which begins the rest of the word; *i.e.*, for the vowel *a* in *rabbit*. He may whisper a prolongation of this vowel. Then, at a given signal, he is to say *rabbit* as swiftly as possible. This preformation of the vowel will often solve the problem. Similarly, the practice of pairs of words, the first ending in the vowel of the second, will be effective. Using pairs of words in which the first word ends with the new sound and the second begins with the same sound is occasionally useful, although the student should be cautioned to keep out all breaks of continuity.

Another method of eliminating this error is to use some nonsense symbol to represent the part of the word which follows the new sound. Thus one individual was asked to say *oup* every time he wrote a question mark (?), and, after ten minutes of this, he was told to read the following symbols, *t?*, *kr?*, and *s?*. The last symbol was pronounced *soup* rather than *sthoup*, and no further difficulty was experienced.

How To Get the Child To Use the New Sound Consistently

One of the most important steps in the treatment of both articulatory and voice disorders is getting the child to use the new sound consistently in his daily conversation. It is not enough merely to teach the child how to make the correct sound; he must follow a systematic program of effecting the transition into casual speech.

Such a program should include, first of all, definite speech periods at school and at home, during which the child uses speech primarily for correction purposes. These periods should be short, varied, and well motivated. Such a program should also include the use of speech assignments in

outside situations; the use of checking devices and penalties; the use of negative practice; and the use of persons, words, and situations as nuclei of good speech. Each of these activities is outlined in the paragraphs which follow:

Some suggested activities for school and home speech periods are:

(1) Making and using scrapbooks or flash cards wherein the pictures represent words containing the sound on which the child is working; (2) hiding word or picture cards about the room, and requiring the child to say the word correctly until he finds it; (3) reading passages in which words containing defective sound are underlined; (4) teacher or parent uses error in his speech, asking child to correct him; (5) child writes new word containing defective sound on calendar each day; (6) use of jingles and sentences in which particular sound is emphasized.

Other speech games and activities can be readily devised by anyone truly interested in the child.

Speech assignments. Some typical speech assignments to illustrate methods for getting the child to work on his errors in outside situations are:

(1) Go downstairs and ask the janitor for a dust rag. Be sure to say *rag* with a good long *rrr*; (2) Say the word *rabbit* to three other children without letting them know that you are working on your speech; (3) Ask your father if you said any word wrongly after you tell him what you did in school today.

The teacher should always make these assignments very definite and appropriate to the child's ability and environment. He should always ask for a report the next day. Such assignments frequently are the solution to any lack of motivation the child may have.

Checking devices and penalties. Checking devices and penalties are of great value when properly used. Typical checking devices are:

(1) Having child carry card and crayon during geography recitation, making a mark or writing the word whenever he makes

an error; (2) having some other child check errors in a similar fashion; (3) having child transfer marbles from one pocket to another, one for each error. Many others may be invented, and they will bring the error to consciousness very rapidly.

Similarly, penalties are of great service, when used properly. It should be realized, however, that painful and highly emotional penalties should not be used, for they merely make the bad habit more pronounced and cause the child to hate his speech work. Penalties used in speech correction should be very vivid and very good natured. Typical penalties used with a 10-year-old lisper were: put pencil behind ear; step in wastebasket; pound pan; look between legs; close one eye; say "whoopee." Let the child set his own penalties before he makes the speech attempt.

Nucleus situations. Many parents and teachers make the mistake of correcting the child whenever he makes speech errors. It is very unwise to set the speech standards too high. No one can watch himself all the time, and we all hate to be nagged. As a matter of fact, too much vigilance by the speech defective can produce such speech inhibitions that the speech work becomes thoroughly distasteful. Fluency disappears and the speech becomes very halting and unpleasant. Then, too, the very anxiety lest error occur, when carried to the extreme, seems to be able to increase the number of slips and mistakes themselves. Other errors sometimes appear.

Therefore, we recommend that the parents and teachers of the speech defective concentrate their reminding and correcting upon a few common words and upon certain nuclei speech situations. Use a certain chair as a good-speech chair. Whenever the child sits in it, he must watch himself. Have a certain person picked out who is to serve as the speech situation in which the child must use very careful speech. Use a certain speech situation, such as the dinner table, to serve as a nucleus of good speech, and,

when errors occur in these nuclei situations, penalize them good naturedly but vividly. You will find that the speech vigilance and freedom from errors will spread rapidly to all other situations.

Finally, we recommend that, after a child has mastered a new sound and several words in which it occurs, he be required to say it occasionally in the wrong way. This is called negative practice, and it has no harmful effect. Indeed, it merely emphasizes the distinction between the correct and incorrect sounds.

Negative practice. By negative practice, we mean the deliberate and voluntary use of the incorrect sound or speech error. It may seem somewhat odd to advise speech defectives to practice their errors, for we have always assumed that practice makes perfection, and certainly we do not want the student to become more perfect in the use of his errors. Nevertheless, modern experimental psychology has demonstrated that when one seeks to break a habit that is rather unconscious (such as fingernail-biting or the substitution of *sh* for *s*), much more rapid progress is made if the possessor of the habit will occasionally (and at appropriate times) use the error deliberately. The reasons for this method are: (1) The greatest strength of such a habit lies in the fact that the possessor is not aware of it every time it occurs. All habit reactions tend to become more or less unconscious, and certainly those involved in speech are of this type; consciousness of the reaction must come before it can be eliminated. (2) Voluntary practice of the reaction makes it very vivid, thus increasing vigilance and contributing to the awareness of the cues that signal the approach of the reaction. (3) The voluntary practice of the error acts as a penalty.

The use of negative practice is so varied that it would be impossible to describe all the applications which can be made of it. Variations must be made to fit each type of

disorder and each individual case. There are, however, certain general principles which may be said to govern all disorders and cases. Make the individual aware of the reasons for his use of the incorrect sound, for unintelligent use of the error is worthless. Never ask the student to use the error until he can produce the correct sound whenever asked to do so. Negative practice is a technique for getting the correct sound into the student's speech; it is used to make the correct sound habitual.

Set up the exact reproduction of the incorrect sound as a goal. The use of mirror observation, teacher imitation, and phonograph recording is invaluable. This is a learning process and does not come all at once. The teacher should confine all negative practice to the speech lesson until the student is able to duplicate the error consistently and fairly accurately. One should begin the use of this technique by asking the student to duplicate the error immediately after it has occurred. That is to say, the student should stop immediately after lisping on the word *soup* and attempt voluntarily to duplicate his performance.

Work constantly to make the negative practice serve the purpose of comparing the right and wrong sounds. It is often well to provide lists of words for the students to work with, speaking each of them in this sequence: correctly, incorrectly, correctly, correctly. Work first on individual sounds, then on words, then on certain words in sentences containing two words which begin with the difficult sound, one of which is to be said correctly and the other incorrectly. Have the student read material in which certain words are underlined for negative practice.

Make speech assignments for the student's use in outside situations. Examples:

(1) Collect (write down on cards) ten words on which you have used negative practice. (2) Write down on a card two words on which you have used negative practice during each hour

of the morning. (3) Write the first sentences of five phone calls, underlining the words on which you are going to use negative practice. (4) Collect, during the day, twenty words which you have said wrongly, have become aware of the error, made a retrial and said correctly, and then have made a second retrial using negative practice.

The preceding list of examples is merely indicative of the type of assignments which may be used. It is vitally important that no assignment be made that does not call for an objective record of some kind. The teacher must ask for the card and discuss the fulfillment or nonfulfillment of the assignment. Assignment plus checkup will work wonders in the treatment of any speech defective. Vary the assignments to fit the case, and always make them purposeful, never a matter of routine or drill.

In concluding this section on articulatory disorders we wish to point out that in very few instances will it be necessary to spend more than five or ten minutes of individual work each day on any speech defective. Most of the work can be carried on in connection with the regular school activities, and so it should be, if the new habits are to be made permanent. Any teacher can see the possibilities for combining speech work with the language activities. In the names of the numbers themselves, arithmetic presents almost all of the speech sounds. Geography and science activities may be arranged so as to give the lisper recitations in which he is responsible for all new *s* words. Questions may be phrased so as to demand responses which involve the sound upon which error occurs. The teacher and student may have a secret signal for correction. The student should check all errors in a notebook. At times it is wise to post on the board a list of five words with which the student has trouble unless he watches himself. Occasionally, some other student may be asked to check on the speech-defective's errors. Class recitations should be used

not for teaching a new sound but for building up the strength of the new sound after the student can make it correctly.

Drill. Most of the texts on speech correction are heavily laden with lists of words, phrases, and sentences which contain the various speech sounds. Most of them imply or state that the speech defective must be drilled intensively on such material before he can hope to speak without error. Many of them advocate the use of tongue-twisters and similar difficult sentences. Modern educational practice and theory are rapidly getting away from the older concept of drill as a valuable tool. If it provided any value at all, it was that of opportunity for stimulation and performance, both of which factors depend upon many other influences for their efficacy. Motivation, maturation, discrimination, and application to life situations are indispensable adjuncts of any therapy, and the old-fashioned drill lesson tended to kill their usefulness. In speech correction, very little of such dull routine is necessary. The teacher should constantly assume the role of a helper or an assistant, placing the entire responsibility upon the student. Even with little children it is wise to outline the major steps of treatment for them as soon as possible. The student must know what he is trying to do throughout the whole therapy. He should be cautioned against mechanical, unpointed repetition of sounds. He should always be dynamically learning or unlearning. Speech correction is an active, not a passive, process.

Nevertheless, since the errors occur in words, they must be eradicated in words, and for this purpose the word lists are very valuable. The speech-correction teacher should be familiar with the lists of Horn, and the words most commonly used should be practiced first and most frequently. The text by Schoolfield listed in the references at the end of this chapter is a most welcome addition to modern speech

to Defects of Speech," *Archives of Speech*, 1936, Vol. 1, pages 204-217.

A study of the oral and speech examinations given to 410 students, showing that 87 percent of the defective speech cases, 62 percent of the average speech cases, and 35 percent of the superior speakers had malocclusion of the teeth. Other conclusions are also noted.

4. Hall, M., "Auditory Factors in Functional Articulatory Speech Defects," *Journal of Experimental Education*, December, 1938, pages 110-132.

This study was carried out with a group of functional articulatory speech defectives, who were matched with a group of normal speakers. Among the conclusions, we find: no significant differences in the two groups in their ability to discriminate between pairs of speech sounds; articulation rating had a zero correlation with all four auditory measures used; and the experimental group had more low ratings on voice than the control group exhibited.

5. Hawk, S., "Moto-Kinaesthetic Speech Training for Children," *Journal of Speech Disorders*, December, 1937, pages 231-237.

A discussion of the Hill-Young method of speech training, especially with handicapped children.

6. Kimball, H., and Muyskens, J., "Speech Reconstruction After Prosthesis," *Journal of Speech Disorders*, December, 1937, pages 217-230.

A report of a case in which gradual prosthesis was accomplished with coöperation between the dentist and the speech teacher. A new sound classification was arranged to facilitate corrective work in speech.

7. Lord, E., *Children Handicapped by Cerebral Palsy*, Chapters 4-6, New York, Commonwealth Fund, 1937.

In this text a medical explanation of cerebral palsy is given, and the psychological aspects of muscle training, the teacher's problem, and the emotional problems of both the child and the parent are discussed.

8. Scripture, E., *Stuttering, Lipping, and Correction of the Speech of the Deaf*, Part 2, New York, Macmillan Co., 1926.

Several defects of enunciation are grouped under the term "lipping." "Negligent lipping" refers to sound substitution due to mental carelessness; "organic lipping" is articulatory difficulty with a basic anatomical defect; "neurotic lipping" has an abnor-

2. Heltman, H., "Devices for the Correction of Articulatory Defects of Speech," *Proceedings American Speech Correction Association*, 1933, Vol. 3, pages 1-7.

A group of phonetic placement techniques and other devices for producing desired sounds.

3. Koepp-Baker, H., *Handbook of Clinical Speech*, Vol. 2, pages 345-352, Ann Arbor, Edwards Brothers, 1937.

An outline of the general principles involved in learning a new sound, including procedures in listening, experimentation, and practice.

4. Mosher, J. A., *The Production of Correct Speech Sounds*, pages 3-7, Boston, Expression Co., 1929.

General principles are given for teaching a new sound, and four aids are suggested: a good dictionary, a hand mirror, an applicator, and the international phonetic alphabet.

5. Nemoy, E., and Davis, S., *The Correction of Defective Consonant Sounds*, pages 41-188, Boston, Expression Co., 1937.

A detailed discussion of the production of each consonant sound, with suggestions for the correction of each one.

6. Peppard, H., *The Correction of Speech Defects*, Chapter 6, pages 96-97, New York, Macmillan Co., 1925.

Chapter 6 gives general exercises for the correction of speech defects, with special exercises for the speech organs. Pages 96-97, in considering the correction of baby talk, give rules for teaching new consonant sounds. The author recommends that no work be done on familiar words.

7. Robbins, S. D., "Aids in Correcting Articulatory Defects," *Proceedings American Speech Correction Association*, 1934, Vol. 4, pages 22-31.

A new classification terminology is given for articulatory disorders, with some hints for treatment. Voiced and unvoiced errors are discussed.

8. Ward, I. C., *Defects of Speech*, pages 1-4, New York, E. P. Dutton Co., 1923.

General principles to be used in teaching a student a new sound are given, with three specific qualifications stated for the teacher:

1. The exact knowledge of sound formation. 2. A trained ear. 3. The ability to make both the right and wrong sounds. A later reference (pages 59-71) gives methods for making the individual sounds.

9. West, R., Kennedy, L., and Carr, A., *The Rehabilitation*

The Treatment of Voice Disorders

Voice disorders account for only approximately ten or fifteen percent of the speech correctionist's cases, but they are frequently the most difficult of all problems. The reasons for this difficulty are, no doubt, the lack of research, the complexity of the problem, and the fact that such cases have usually been treated by elocution and singing teachers rather than by members of the medical or speech-correction professions. The literature is very scanty and very scattered. Except for certain occupations such as the ministry, teaching, and entertaining, the average voice defect is not a handicap, since communication is still possible, a factor which does not hold true in stuttering or articulatory difficulties.

As we have said, there are almost as many names for voice disorders as there are adjectives to describe the voice, but in general they may be classified as disorders of pitch, intensity, and voice quality. Frequently any one case will be defective in more than one of these aspects, but for clearness of presentation we shall consider them according to the above classification.

Need for medical coöperation in diagnosis. Many of the voice disorders are medical problems, and the speech correctionist must always keep this in mind. Much harm can be done by administering vocal training to a case whose disorder is due to active pathology or organic abnormalities.

has been done or could be done so that he can refer the case to the proper specialist and can modify the treatment according to his recommendations. He should also know whether the condition is likely to return. Since most of this information is rather technical and is available in other texts, the student is advised to use the special references given at the end of the chapter. The speech-correction teacher can do a great deal to aid in building good habits of body hygiene, thereby preventing the development of foci of infection. Most cases of denasality and hoarseness can be helped by the institution of a careful routine of cleanliness and care of nose, mouth, and throat.

Hearing loss. When the voice defect is associated with a hearing loss, the teacher should take advantage of every opportunity to become familiar with the operation and use of hearing aids. She should refer the student to a lip-reading teacher, who will not only aid in the perception of speech but also help to clarify the various vowel positions through phonetic placement. Attention to kinesthesia, and the tying up of intensity and pitch levels and fluctuations with bodily movements, can do a great deal to compensate for the hearing loss, especially if the loss is not one of long standing.

Delayed sexual development. Another cause of voice disorders is lack of physiological or psychological sexual development, which produces the shrill high pitch termed juvenile or eunuchoid voice. Gilkinson¹ points out that his research findings corroborate the generally accepted idea that people are inclined to judge masculinity in terms of the speaking voice. When other secondary sex characteristics are also lacking, the speech correctionist should refer the case to the physician, who may prescribe hor-

¹ Gilkinson, H., "The Relationship Between Psychological and Physical Measures of Masculinity," *Genetic Psychology Monographs*, 1937, Vol. 19, pages 105-154.

ond, or through observation of self and model in a mirror while speaking in unison.); (3) the use of swallowing, chewing, coughing, and similar biological movement sequences to promote speed of the articulators; (4) babbling practice while relaxed; (5) specific exercises in sudden initiation, repetition, or rhythmic timing of velar occlusion, tongue-teeth contacts, jaw openings, and so on; (6) exaggerated articulation of the vowels, compensating for error; (7) normal speech assignments; (8) negative practice. Many exercises for accomplishing these goals will be found in the references or may easily be invented.

Strain. One of the most frequent causes of voice disorders is overuse and strain of the voice. While the best therapy for this condition is to take care of it before it occurs—*i.e.*, to use preventive rather than remedial methods—it presents a very serious handicap when it does occur. Parents of children who show an especially prevalent tendency toward becoming very hoarse or dysphonic after strenuous play should be informed of the probable consequences and urged to do what they can to prevent the screaming and shrieking which seems to be such a large part of American childhood. During the period of huskiness or hoarseness following overstrain, it is necessary to prescribe and enforce whispered speech, which should consist of relaxed whispering rather than the tense, strained, aspirate quality frequently heard. The child should be prevented from engaging in any further strained vocalization during the period of recovery. While some voices seem able to withstand any amount of abuse, the majority of them definitely cannot, and certain voices need positive protection.

Individuals whose occupations demand a great deal of public speaking often misuse their vocal apparatus in several ways, especially when there is great competition for speech or attention. They use too high a pitch or too nasal

should be required to imitate the model in a very conscious manner, listening to the pitch, intensity, and quality thereby produced. Burlesquing and exaggerating the traits imitated often eradicate them. Good-natured and humorous penalties help a great deal. Other models should be imitated, especially in situations in which the student is somewhat insecure. Even when these habits are of long standing, such techniques are very useful.

Hypertension. Another common cause of voice disorders is the presence of excess tension in the vocal apparatus. The laryngeal valve is one of the first structures of the body to reflect any general tenseness. This is clearly demonstrated in the emotional states of fear, excitement, and rage. The popular expressions, "My heart was in my mouth ('globus hystericus')," and "I was scared speechless," indicate the validity of this observation. Readiness for emergency action demands the holding of the breath with a resultant firm closure of the vocal cords, and tenseness is merely a synonym for such readiness. Moreover, excess tension causes constriction of the soft surfaces of the resonating cavities and difficulty in performing the quick transitions needed in speech. All of these factors produce symptoms of defective pitch, intensity, and voice quality. The usual cause of this hypertension is insecurity and maladjustment. Feelings of inadequacy in a social situation always provoke tenseness, and, when this sense of inadequacy permeates the majority of the individual's life situations, a general and almost permanent hypertension results. Only through mental-hygiene methods and readjustment can such a problem be solved. Voice training will always be useless until such a cause is eliminated. Occasionally, however, hypertension becomes such an habitual associate of certain specific speech situations, such as the telephone or public speaking, that it persists long after the original insecurity has disappeared. It often becomes localized in certain

structures, such as the throat or the tongue. In these instances, relaxation exercises are helpful and necessary.

Methods for relaxation. Many exercises and systems of relaxation have been invented and are in widespread use. The student should familiarize himself with these methods as they are described in the references given at the end of the chapter. Those by Jacobson are especially recommended. In general, the sequence is usually as follows: (1) The student is required to assume a position which requires a minimum of muscular contraction in order to maintain his posture. This is frequently accompanied by strong suggestions by the teacher of quiescence, peacefulness, freedom, and limpness. Biological functions such as yawning or stretching are used as reinforcing devices. Sleep and hypnoidal states, however, should be guarded against, for what is desired is conscious relaxation. (2) After the student has attained a rather consistent state of general relaxation, the teacher, speaking and moving slowly, should move the student's arm up and down or from side to side, requiring the student to remain entirely passive and without resisting the movement. This will give the student some of the sensations of the type of kinesthesia desired. (3) After this has been done successfully, the same procedure should be repeated with the exception that the student resists the movement while maintaining a passive and fairly complete state of relaxation with the rest of his body. The resistance should not be complete but yielding, resulting finally in thorough relaxation of the structure moved. Differential tension produced through the resistance should be gradually changed to differential relaxation. These techniques should then be repeated in an easy sitting and standing posture. (4) After the student has learned to employ the techniques consistently with his arms or legs, he should attempt a similar tensing and relaxing of the lips, jaw, tongue, palate, throat, and larynx, always seeking to iden-

tify, perpetuate, and produce the sensations which mean relaxation. Frequently, these sensations seem to be of a negative variety to the subject—*i.e.*, they appear when he seems to be “letting go” or “becoming limp.” They consist of “not doing” something, of “not making some contraction.” (5) Speech activity should be attempted first in a very effortless whisper, taking place on the regular expiration of silent breathing, without permitting any alteration in the regularity of the preceding inspiration. It should proceed through gradual stages, often employing a quiet yawning to produce the effortless vocalization desired. It should always be accompanied by the “feel” of relaxation in the structures of the laryngeal and articulatory musculature. (6) Beginning first with reading, repetitive, or memorized material when alone with the teacher, the student progresses to simple propositional speech, such as that involved in retelling stories or incidents. Then other people are included within the speech situation, and, finally, question-and-answer techniques are used. (7) The student is required to go, with the teacher as an observer, into speech situations which will produce mild emotional states. In these he attempts to speak while still maintaining both a general and localized relaxation. From this point, he should be required to keep a diary or daily check of situations in which he failed to carry out his new technique, and frequent checkups should be maintained.

Emotional maladjustment. Some authorities state that the most common of all causes of voice disorders is maladjustment. It is certainly true that a great many voice cases present personality problems and give a history of profound emotional conflicts. This is due, in part, to the influence of emotion upon intonation. The cries of animals and infants and the speech of primitive man demonstrate conclusively that one of the fundamental expressions of emotional states is that of phonation. Pitch level, inflec-

may be of inestimable value. Most persons beset with emotional conflicts need some assistance and guidance, even if it be no more than the presence of a human ear into which they can pour their troubles. If this ear belongs to a person with some background in mental hygiene and abnormal psychology, and some experience in self-improvement and adjustment, a well-planned remedial program will soon be devised and initiated. Suggestions for the treatment of maladjustment were given in Chapter V.

The causes of voice disorders which have been mentioned are the most common ones which the speech correctionist will meet. Every effort should be made to discover and remove them and their influences. Voice disorders, more so than any other disorder, require the diagnosis and removal of etiological factors. Treatment of the symptoms is often necessary, but voice retraining is usually doomed to failure unless the reasons for the defect are eliminated.

The Treatment of Pitch Disorders

The treatment of these disorders concerns itself primarily with the teaching of new habitual pitch levels and the teaching of new inflection patterns. Since many disorders of intensity and voice quality are often due in part to the use of unnatural pitch levels, the techniques discussed in this section are useful in the treatment of all voice disorders. Disorders of intensity frequently demand the teaching of a higher pitch level, especially when the speech defective is male, but the large share of remedial work consists of teaching lower habitual pitch levels.

The concept of a habitual pitch level must be clearly understood. Except in the case of monotones, it does not refer to a certain fixed pitch upon which all speech is phonated. It represents an average or median pitch about which the other pitches used in speech tend to cluster. For example, in the utterance of the sentence, "Alice was sitting

It is difficult to consider discriminatingly anything which is very familiar. We are so "used" to the sound of our own voices that we cannot listen to them. The increased availability of voice-recording devices is of great value to the speech correctionist. Every voice defective should have a phonograph record made of his speech. Other individuals with good voices should repeat the same speech material on the same record so as to allow comparison. If the recording is a faithful reproduction, the student will recognize the adequacy of the other voices and the inadequacy of his own in so vivid a manner as to provide a true psychological shock. Such a shock is frequently needed to provide the necessary motivation. The record can also serve as a basis for the measurement of progress. Besides the voice recording, the teacher can require each student to speak before a class, the members of which should be asked to rate the speakers as to pitch and general adequacy of voice. Other methods may be invented.

Improper pitch levels produce so many of the disorders of voice quality that they cannot be neglected. Many individuals have learned improper pitch levels owing to their personality problems, their imitation of poor models, their desire to identify themselves with other individuals, and many other reasons. It is usually necessary to recognize these influences and to cancel them before the student will really coöperate. A few cases may illustrate these points.

Bullowa described the etiology of certain voice disorders suddenly occurring in a high school as follows: "In order to acquire the low, lady-like voice which high school children believe suits their condition as opposed to the shrill shout of elementary school days, many students close their mouths, and inaudibility and nasality result."⁴

Ridpath, pleading for better coöperation between singing teach-

⁴ Bullowa, A. M., "The Need for Speech Work in High Schools," *Proceedings National Education Association*, 1912, Vol. 54, pages 870-874.

ers and the laryngologist, says, "It is a fact that most vocal teachers try to make sopranos of all girls and tenors of all men, with resultant failures, whereas if they would consider the individual from the physiologic point of view they would not expect a student who is anatomically unsuited to produce high tonal effects to become a tenor, and vice versa."⁵

Felderman, in speaking of the folly of using an improper pitch level, declares that self-consciousness prompts the aping of elders by using coarse, throaty, guttural, or nasal voices, the use of which is continued even after the child passes through adolescence and does achieve a lower pitch. "Invariably the imitation fails."⁶

T.S., one of the author's cases, a schoolteacher, was dismissed after one month of teaching because the students could not hear her. It was found upon examination that her habitual pitch level was less than three semitones above the bottom of her range, whereas her optimal or natural pitch level was at least six semitones above her habitual level. She possessed adequate intensity at the optimal level but declared she could not bear to speak in such a high voice. Investigation showed that a series of experiences in which high voices had been penalized had caused her prejudice, which was truly unfounded since her optimal pitch was that of middle C. The last of these experiences had been the scolding given by a critic teacher to another student. Therapy consisted primarily of having her make phonograph recordings of the voices of twenty successful teachers and analyzing them with respect to habitual pitch. Mental hygiene and insight into the role played by her early experiences in producing her old pitch level helped to convince her. A course in practice teaching completed the reëducation, and no further difficulty was experienced vocationally.

2. *Ear-training techniques in the recognition and discrimination of pitch levels and variations.* Before the teacher makes any attempt to get the student to lower or

⁵ Ridpath, R. F., "A Plea for a Better Understanding Between the Laryngologist and the Vocal Teacher," *Journal American Medical Association*, 1937, Vol. 109, pages 545-546.

⁶ Felderman, L., *The Human Voice*, New York, Henry Holt and Co., 1931.

raise his voice, the student should be given a great deal of ear training. This training should be concentrated upon the identification and comparison of pitch levels and the recognition of the types of inflections. Many of these individuals have great difficulty in carrying tunes, in matching the pitch given by the teacher, in running a scale, and in recognizing or using inflections. When all of these abilities are defective, the prognosis is not favorable, though ear training will occasionally accomplish wonders. Even when the student has no difficulty with these activities, he should be given a good deal of discrimination practice before he attempts performance.

The ear training should begin with the methods used in the voice tests described in Chapter IX. Pairs of tones should be vocalized by the teacher as the student records or designates which of the two is lower in pitch. If difficulty is experienced, very wide intervals should be used. The Seashore musical tests for pitch may be played repeatedly, and the student should be urged to better his score of correct judgments. Inflections, glides, and slides of all types may be used for stimulation. Care should be taken to prevent the student from making his judgment in terms of quality or intensity.

Often the teacher needs to accompany her presentation of this stimulation with sample pairs of sounds phonated while she raises and lowers her hand to indicate the pitch level used. The student should be required to follow pitch variations with similar movements, and after his judgments are consistently correct, he should make slight head movements to indicate higher or lower pitch levels. It is often necessary to use much of this kinesthesia in order to reinforce and recall the stimulation. After the student has been given some of this training with pairs of tones and inflections, simple melodies should be used, both in song and in speech. These should be followed by the student's head

or limb movements. Empathic response to tonal variation should be encouraged. The teacher should then speak whole sentences in a monotone, at various pitch levels, asking the student to judge the pitch levels used. Finally, normal speech can be used for this presentation, first using higher, then lower, average pitches, and requiring judgment by the student. This system may be supplemented by having the student and teacher judge the pitch characteristics of the various members of a class during recitation. Through such methods, the student will soon acquire the necessary foundation for his later speech attempts.

The next phase of the ear training should consist of attempts to hear and match the pitch levels used by some other person. Some musical instrument such as the piano should be used. The student listens to the single prolonged note, the sentence said in monotone, and the conversational sentence in turn, and attempts to find the pitch on the musical instrument which corresponds with that used in stimulation. He should be given a great deal of this matching practice. Pairs of notes, monotone sentences, and conversational sentences should next be used, and the student attempts to match them on the musical instrument. If the student possesses a very poor ear, the teacher should be content with his performance if he can indicate only the direction of pitch change given.

The final stage of ear training should consist of responding to stimulation by designated pitch variations. For example, the teacher hums a note and the student finds one on the musical instrument which is lower (or higher, depending on the level desired for the voice) than that given by the teacher. The teacher may give one sentence for a standard, then repeat it at various pitch levels, asking the student to designate the type he wishes. Occasionally during this practice, the teacher should give the wrong response in order to check up on his alertness and discrimination.

3. *Enabling the student to use the desired pitch level.* After the pitch level which the student should use as his habitual pitch has been determined through experimentation and the voice tests described in Chapter IX, the speech correctionist should stimulate him with that pitch through every means at his disposal. The note may be sustained and a phonograph record made of it. The piano and other musical instruments should be used to make him conscious of it. The speech correctionist should speak in a monotone on the given pitch, or, if that is impossible, on its octave. The student should then attempt to speak certain prepared sentences in unison with the teacher. If necessary, he should hum several pitches until the right one has been found. It should then be reinforced by the playing of the record or the use of the piano and the teacher's voice. The student should repeat the same material over and over, maintaining the pitch. Often only a vowel can be used in this practice, but the student should progress to propositional speech as soon as possible. Attention to kinesthesia should be stressed. Accessory associative movements, such as those of head and arm, should be used after the student has been able to hit the pitch consistently. The speech used should have practically no element of communication.

As soon as the student has attained this pitch while speaking in unison with reinforcing stimulation, the latter should be gradually diminished until he is attaining the pitch alone. All strain should be avoided or eliminated. It is usually wise to stick to one sentence or one type of material until this can be phonated in the required manner. Then a short period of silence should be interjected, during which the student tries to maintain the pitch. After this, he tries to phonate again at the same pitch level. The silence periods are then lengthened and some distraction is introduced. After further reinforcement and repetition of the sentence on the new pitch, returning immediately to the

former, the student should interject another sentence spoken at his old pitch. Such comparative activity should be stressed. The student must realize how much higher (or lower) his new pitch level is, and therefore the old pitch level may serve as a standard of reference. Often the difference in terms of the tonic scale may be used to indicate the amount of change. The teacher cannot hope to establish anything in the nature of the special talent of absolute pitch, but she can hope to establish a sense of the amount of deviation from the old pitch level. The exercises in maintaining a pitch are of great importance in providing the self-stimulation these voice cases need and in preventing the natural tendency to shift gradually back to the old pitch level.

For a time, the voice retraining should be confined to the teaching periods, and all of them should begin with ear training and end with monotone speech on the desired pitch. Then the student may begin to use other material than that with which he learned to use his new pitch level, and when speaking these new sentences he should be encouraged to use all the inflections normal to him. At first, he should alternate the key vowel or sentence and the new material, and the teacher should require the student to do much of the speech in unison with her, perhaps with the reinforcement of the phonograph record or piano. Gradually this reinforcement should be withdrawn, until the student is phonating easily and flexibly at his new pitch level. Frequent review of the methods for finding his new pitch level in terms of his old habitual pitch is necessary.

Although the above method for teaching a new pitch level is most effective, there are several others. One which is frequently employed uses the vocalized sigh or yawn to produce the desired pitch. These sighs and yawns must be accompanied by decreasing intensity and relaxation in order to be most effective. Another method employs ex-

connection for the articulatory cases. There should be definite speech periods at school and at home in which the student concentrates on the use of the new pitch. Speech assignments to get the student to use the new voice in outside situations should be formulated and carried out. Checking devices and penalties will serve to motivate the student and to make him conscious of his return to the old pitch levels. Negative practice in which the student uses the old pitch levels serves a similar purpose. A consistent program including these activities will soon make the new pitch level and range very habitual.

The Treatment of Intensity Disorders

Types of intensity disorders. These disorders include too loud voices, too weak voices, and aphonia (the lack of phonated speech). Since the causes of too loud a voice are hearing loss, occupational influence (farmer's voice), personality problem (exhibitionism or overaggressiveness), or imitation, very little special therapy other than that sketched in the first section of this chapter is required.

Voices which are not loud enough for efficient communication are fairly common, but they seldom are referred to the speech correctionist. Imitation, overcompensation for hearing loss, and feelings of inadequacy leading to retreat reactions account for most of them. Many pathological reasons for such disorders are common, but they are frequently accompanied by breathiness, huskiness or hoarseness, or other symptoms sufficiently evident to necessitate the services of the physician, who should rightfully take care of them.

Improper breathing habits. There are, however, certain speech cases possessing voice defects of weak intensity which require other treatment than that sketched in the section concerned with removing the causes of voice disorders. These individuals, owing to the influence of several

of the functional causes above mentioned, have built up inadequate breathing habits which markedly interfere with efficient speech. They lack what the speech teachers and singing teachers have termed "support for tone." When the latter is analyzed in more objective fashion, using actual breathing records, support for tone is found to consist, not of deep inhalation, but of controlled exhalation. Inhalation for good speech is seldom any deeper than for silence. The air supply is merely expended very efficiently. Poor speakers, and especially those of the weak voice intensities,

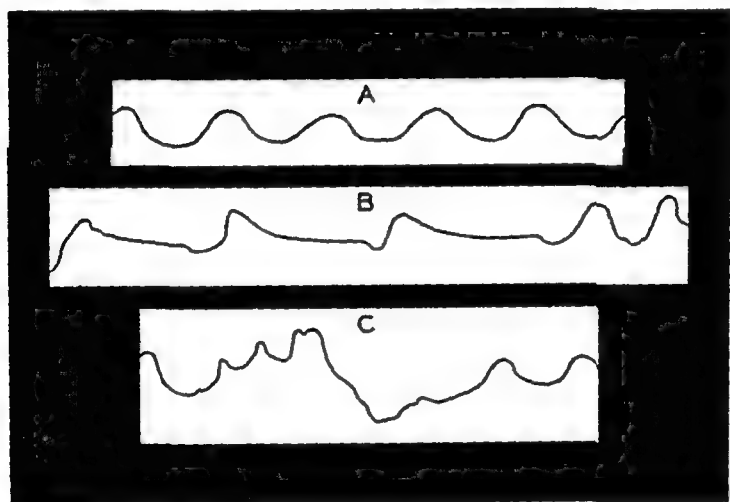


Fig. 18. Three breathing records. *Upper record*: normal silent breathing; *middle record*: breathing during normal speech; *lower record*: breathing during speech of a woman who talked on inhalation. Inspiration is represented by the upward strokes, expiration by the downward. Read from left to right.

often speak on residual air. They sometimes attempt to speak while inhaling. They interrupt their exhalation by quick gasps, even though sufficient air is retained for speech.

Although Wiksell (see references) found in recent experimentation that for normal subjects there was no rela-

tionship between type of breathing and voice intensity, it is obvious from the above illustration that individuals possessing such abnormal breathing patterns would tend to be handicapped in phonation. Efficient phonation demands continuous and sufficient air pressure below the vocal folds. Clinicians have found that training in breath control is of great usefulness in such cases.

Breathing habits for speech are very difficult to modify. Retraining necessitates a carefully planned program which

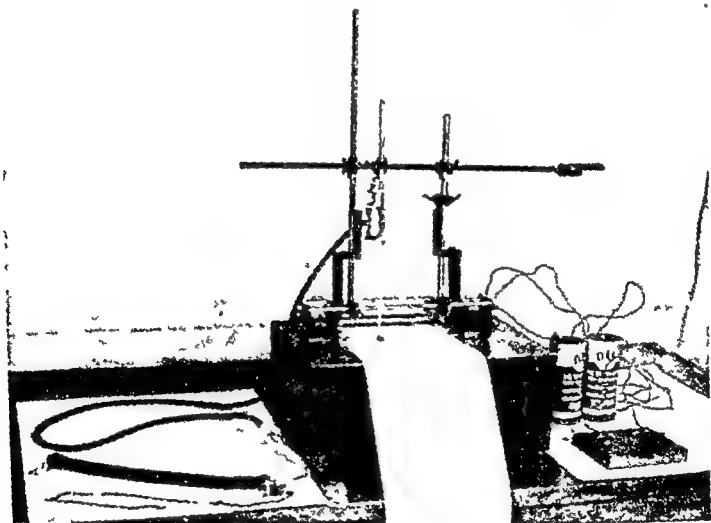


Fig. 19. Apparatus used in recording breathing. *From left to right:* pneumograph, polygraph, experimenter's signal key.

must be based upon the breathing anomalies habitual in each case. The speech correctionist should first make a careful examination of the student's breathing under various conditions. Unemotional propositional speech, conversation, oral reading to self and to audience, and public speaking should be provided for such study. Whenever possible, an objective record should be made of the breath-

ing in these situations. Vital capacity measurements may be made by the school nurse. Care should be taken to discount the breathing abnormalities produced by emotional states, since they are to be eradicated not through breath control but through emotional readjustment. This section is concerned with those stereotyped breathing habits which interfere with efficient phonation. If no apparatus is available for the objective recording of breathing, the speech-correction teacher who has been given training in comparing such recordings with her observation of the movements of the thorax and abdomen can rely upon observation alone.

In the past, a great deal of stress has been placed upon the necessity for teaching certain types of breathing habits. Thoracic breathing, abdominal breathing, diaphragmatic breathing, and many other more or less meaningless terms have been espoused by various elocution and speech teachers. Gray has shown that it is difficult to isolate any specific types of breathing, that all of the so-called types are used by most individuals, and that, if speakers be classified according to their "type of breathing," there will be as many abdominal and thoracic breathers in a group of the worst speakers as in a group of the best speakers. Type of breathing, therefore, does not differentiate between the good and poor voices. One exception to this statement may be mentioned. Clavicular breathing, which involves the raising of the clavicles and the humping up of the shoulders into a strained position, tends to produce unsteadiness and jerky exhalation during speech. Wiksell's experimentation indicates that, in the cases in which breathing was predominantly thoracic, the subjects could hold a tone for a longer time and could get much better control of breathing than the cases in which abdominal breathing was most prominent. In speech correction, very little attention is paid to type of breathing in terms of the musculature in-

volved. We are interested only in providing sufficient breath and in teaching efficient habits of controlled exhalation. If the student attains these goals, he may breathe in any way he wishes.

The teaching of new breathing habits. The procedure to be followed in retraining the breathing used in speech is as follows: (1) The student must be made aware of what he is doing wrongly and convinced of the necessity for the formation of new breathing habits during speech attempt. (2) The old habits must be brought up to consciousness, disrupted, and penalized. (3) New habits of breathing must be taught and strengthened. (4) The student must learn to use the new habits consistently.

The best method of attaining the first goal is to have the student watch his breathing during phonation, comparing it with that of the teacher. Two pneumographs working onto the same polygraph will provide the necessary apparatus. Both student and teacher should speak the same sentences in unison. If this is impossible, the student and teacher should sit before a large mirror in a position that will provide a profile view of both chests. A turn of the head will enable both the teacher and student to watch the rise and fall of the thorax. Sentences should be spoken in unison, the student attempting to control his exhalation synchronously with the teacher's. A yardstick placed across the surfaces of both chests will aid in this observation. Reading material checked according to the amount read per exhalation is very convenient. Through these methods, the student will soon come to realize how much more inefficient his breathing is than that of the teacher, and also wherein his breathing differs. A rubber tube attached to a mouthpiece which fits closely about the mouth may be easily contrived, and, if this instrument is used during speech and the end of the tube is placed near a candle flame, the student can readily see the effect of

any preliminary exhalation which precedes the attempted phonation.

The student should then use the same apparatus during conversation or recitation from memory, but with his eyes closed, seeking meanwhile to sense when his breathing has been faulty. The teacher can watch the apparatus and tell the student whether his judgments have been accurate. He should then seek to duplicate consciously the old habits, and the teacher may imitate them. Through these and many other techniques which may easily be devised, the student becomes aware of the bad breathing habits.

Using reading material previously prepared for breath groupings and using the apparatus and techniques above described, the student will soon adopt methods which are so much more efficient that they appear almost as soon as the old habits are removed. The speech correctionist does not need to teach the new habits, but merely needs to remove the old. The student needs only to imitate a good model and to understand and experience what is meant by smooth, controlled exhalation in order to perform adequately. The real difficulty is experienced in carrying these new habits into normal, everyday speech.

In order to accomplish the latter end, the student should spend some time each day in oral reading, choosing material which is conversational in form. Selections from some of the modern "patter" plays are excellent material. They should be read as normally as possible. Lines can be memorized and used for speech practice. Speech assignments, checking devices, negative practice, penalties, and the use of nucleus situations will enable the student to make the new breathing methods habitual.

Other methods for increasing voice intensity. Other devices which can be used to increase voice intensity are: (1) nasalizing the vowels; (2) finding and using the natural pitch; (3) accompanying vocalization with strong

muscular effort, such as clenching the fists; (4) using a loud masking noise to demand greater intensity; (5) changing the openings and shapes of the resonating cavities; (6) using emotional expressions, such as cries of pain, to demonstrate to the student that he possesses adequate intensity; (7) using singing or chanting as the vehicle for louder speech.

Readjustment of resonating cavities. Among the methods for increasing vocal intensity is that which employs readjustment of the resonating cavities.

Talley⁷ found that trained public speakers used three different ways of modifying the vowel when they wished to "project" their voices in the audience situation. There was a rise in pitch, an increase in intensity, and a shift of energy from the lower to the higher overtones of the vowel. Laase⁸ performed an experiment which corroborates the latter finding. Tiffin and Steer⁹ found that normal speakers produced stress and emphasis by prolonging the stressed words, and by increasing their pitch, inflection range, and intensity. Russell¹⁰ believes that the epiglottis and false vocal cords tend to act as filters to "muffle complex sounds as a whole and particularly the high pitched metallic partials." West¹¹ believes that a narrow opening between the wings of the epiglottis or between the pillars of the fauces will cause a decrease in the volume of tone produced. Negus¹² demonstrated the importance of resonance to intensity by removing a larynx from an animal and forcing air through its tensed cords. The tone was extremely weak and lacking in quality when compared to the sound normally produced.

⁷ Talley, C. H., "A Comparison of Conversational and Audience Types of Speech," *Archives of Speech*, 1937, Vol. 2, pages 28-40.

⁸ Laase, L. T., "The Effect of Pitch and Intensity on the Quality of Vowels in Speech," *Archives of Speech*, 1937, Vol. 2, pages 41-60.

⁹ Tiffin, J., and Steer, M. D., "An Experimental Analysis of Emphasis," *Speech Monograph*, 1937, Vol. 4, pages 69-74.

¹⁰ Russell, G. O., *Speech and Voice*, pages 175-176, New York, Macmillan Co., 1931.

¹¹ West, R., Kennedy, L., and Carr, A., *The Rehabilitation of Speech*, pages 98-100, New York, Harpers, 1937.

¹² Negus, V. E., *The Mechanism of the Larynx*, Chapter 11, St. Louis, C. V. Mosby, 1930.

These research studies and many others indicate that appropriate adjustment of the resonating cavities can increase the intensity of the voice. Unfortunately, we do not possess exact knowledge of what resonator sizes, shapes, types of tissue, or openings are needed to produce increased intensity. So much individual variation occurs both anatomically and physiologically that no laws of efficient resonance have been formulated. Teachers of public speaking and singing all seem to agree that the resonators must be relaxed and that their orifices or apertures should be as open as possible. They use many vague terms to describe their techniques, which, if they are successful, probably produce the desired results by helping to identify successful performance or by insuring adequate manipulation of the resonating structures. Some of these terms are: "bringing forward the tone," "mouth focus," "voice placement," and "rounded tones." Such terms as "nasal resonance" and "sinus resonance" are probably of the same type.

The speech correctionist seldom uses these vague terms, though, we must confess, he has few more specific techniques to offer. He demonstrates to the student how resonance can increase intensity with little additional expenditure of energy. He insists that the student use a variety of new resonator openings, shapes, and sizes. He requires the student to experiment with relaxation and tension in the various oral and pharyngeal musculatures, noting the effect upon intensity. The student is asked to increase the loudness of a certain tone as he backs away from the microphone of a recording device so that the record will show no decrease in intensity. He is to increase the intensity by varying the resonators rather than by expending more energy. Similar exercises employ an auditor walking away from the speaker rather than having the speaker withdraw from a phonograph recorder. Asking the student to close his eyes as he performs these exercises

will help him to attend to the kinesthetic sensations. He should be asked to describe each successful experience. Thereafter the teacher should use the student's own terminology in identifying the more efficient type of resonation.

Effect on intensity of raising pitch level. Vocal intensity can also be increased by raising the habitual pitch used by the voice case. Scripture¹³ quotes an experiment in which a vowel was sung at a constant level of loudness but at varied pitch levels. When the expenditure of air per pitch level was measured, it was found that the air expenditure decreased with rise in pitch. It is a common observation that children's voices "carry" much better than do adults'. While this may be due in part to the concentration of energy within a narrow group of overtones, the higher pitch level is also important. In general, most of the weak intensity cases are using habitual pitches far below their optimal or natural pitch levels. After the latter has been taught, adequate intensity is achieved. Occasionally the student is taught to make his speech more nasal, using humming exercises as the basic technique.

Influence of psychological factors. A lack of adequate intensity is often due to psychological factors. For example:

One individual with a history of prolonged laryngitis, but with a clean bill of health from the physician, claimed that she was afraid to talk loudly because of the pain she had experienced in the past. Something seemed to stop her whenever she decided to talk a little louder. She constantly fingered her throat. She declared that she was losing all her self-respect by worrying about her inability to speak as loudly as she could. Use of a masking noise during one of her conferences demonstrated to her that she could speak loudly without discomfort. Under strong clinical pressure, she did make the attempt, but the inhibition was automatic.

¹³ Scripture, E. W., *The Elements of Experimental Phonetics*, page 221, New York, Scribners, 1902.

When a masking noise is used with one of these cases, it should be increased very gradually, and then, as the case adjusts the intensity level of speech to the new level, it should be shut off suddenly during his conversation. One of the author's cases was "cured" when he suddenly emerged from a noisy factory and found himself shouting. Vocalization accompanied by strong muscular effort often produces a stronger voice. Cries of pain or warning may often prove to the individual that his difficulty in speaking loudly is not insurmountable. Singing and chanting in unison with a large group will often accomplish the same purpose, especially if the group, at a secret signal from the clinician, suddenly stops. Mental hygiene and an insight into the nature of traumatic experiences usually precede this type of therapy.

Aphonia. Aphonia, or the complete loss of voice, is usually due to overstrain, organic defects, or emotional causes. If the cause is overstrain, rest and silence, or, at the best, whispered speech, should be prescribed. Occasionally the case is required to use a different pitch level when his voice begins to return. If the disorder is due to pathology, medical and surgical care is necessary. If it is due to emotional conflicts, psychiatric treatment (or the type of treatment discussed under readjustment methods) should be administered. In any case, if voice retraining is used, it is merely an accessory tool.

Suggestion is frequently used with hysterical aphonias. Physicians often use a faradic current or ammonia inhalation or massage as the culminating procedures in a period of treatment marked by complete cessation of speech attempt and strong cumulative suggestion. In many instances, coughing is used to demonstrate to the patient that voice exists. Persons who have once had such aphonia are likely to have it again unless the cause is removed. In some instances, when the cause cannot be discovered, a

relapse is prevented by having the individual perform some simple vocal ritual each day, such as prolonging each of the vowels for ten seconds.

Indistinct utterance. Indistinct speech is so frequently confused with intensity voice disorders that it will be discussed in this section. Many individuals possessing this type of speech phonate with sufficient intensity to be heard, but their intelligibility is affected by improper rate, indefinite articulation, and unprecise resonance. These individuals are frequently asked by their auditors to speak more loudly. When this is done, the intelligibility is often decreased still further, owing to the masking of the high-frequency consonant sounds by the lower tones of the vowels. Fletcher¹⁴ concludes from his experiments that consonants are generally harder to recognize correctly than vowels, and that *th*, *f*, *v*, and *z* are the most difficult to perceive at weak intensities. He also demonstrates that a small improvement in articulation produces a great improvement in intelligibility: "If the articulation shows an improvement of from 5 to 10 per cent, the intelligibility will show an improvement of from 20 to 38 per cent."

These indistinct speakers are therefore taught to emphasize their consonants. The four continuants mentioned above as being responsible for most of the distortion are prolonged. The student is further taught to produce them with a more energetic airflow and a tenser lip or tongue. Since other research studies indicate that the stop consonants *p*, *b*, *t*, *d*, *k*, and *g* are among the least powerful of all speech sounds, these are also singled out for special attention. Sudden, precise, and energetic closures and openings are taught. At first it is wise to use prescored material in which only one or two of these sounds are underlined.

¹⁴ Fletcher, H., *Speech and Hearing*, pages 266-289, New York, D. Van Nostrand Co., 1929.

Speech assignments and nucleus situations will carry the new attack into normal speech. Improving such general considerations as the student's posture, neatness, and self-respect often facilitates this more specific therapy.

The Treatment of Disorders of Voice Quality

These disorders are the most common of all voice defects. They include excess nasality, denasality, throatiness, harshness, and all the other descriptive terms which may be used to denote peculiarities of timbre. Only when these peculiarities are sufficiently noticeable to interfere with communication and call attention to themselves can they be considered voice disorders. An infinite range of voice quality variations is found in so-called normal speakers. Excess nasality is probably the most common of these disorders. Cleft-palate speech involves both a phonatory and an articulatory disorder, and the phonatory abnormality is that of hypernasality. The treatment of this disorder employs the techniques sketched both for hypernasality and for articulation, but, because it also requires specialized methods, it is not specifically described in this section.

Sequence of treatment. Although special devices are used for certain of these disorders, the treatment for most of them involves the same general sequence. This sequence is as follows: (1) Make an analysis of the voice to determine which vowels or continuant consonants are most abnormal in their voice quality. This may be done through the voice tests described in Chapter IX. (2) The student must learn to recognize the unpleasant voice quality whenever it occurs in his speech. (3) Through the use of certain techniques, the student must learn to produce the correct quality on isolated vowels. (4) This new voice quality must be strengthened. (5) The student should learn to use the new quality consistently. In the following

paragraphs, we will use the disorder of hypernasality to illustrate the type of treatment to be administered.

Recognition of defective quality. In order that the student may learn to recognize the unpleasant voice quality whenever it occurs in his speech, the vowels which are least defective should be used. The teacher should imitate these vowels as the student produces them, and then repeat them, using excess nasality. The student will readily recognize the difference. He should be required to produce these vowels first normally and then with excess nasality, carefully noting the difference. Lightly placed thumb and forefinger on each side of the septum, or the use of the cold mirror placed under the nostrils, will provide an accessory check of the presence of the hypernasality. The student should then listen to the teacher's production of his worst vowel, with and without nasality. If difficulty is experienced in recognizing this, the student can correlate his auditory judgments with the visual and tactual sensations received from the use of the mirror and finger-septum contact. Requiring him to close and open his eyes during alternate productions of the vowel as the teacher uses the mirror under her nostrils will soon provide adequate discrimination.

After some of this training has been successfully completed, the teacher should read a passage in which certain vowels are underlined and are purposely nasalized. The student should listen carefully, checking on a copy of the passage all vowels in which he hears the unpleasant quality. Many of the games and exercises used in the ear training of articulatory cases can be modified to teach the student better discrimination and identification of the good and bad voice qualities. Although at first the teacher will need to exaggerate the hypernasality, she should endeavor to decrease it gradually until the student is skilled in detecting even a slight amount of it. After this has been done, the student should read and reread a certain paragraph, making

judgments after each word as to whether or not excess nasality occurred. These judgments may be checked by the teacher, and the percentage of correct judgments ascertained. This procedure will serve as a motivating device. The student may also be required to repeat series of words or isolated vowels, using the mirror under his nostrils and making his judgment of normal or nasal voice quality before opening his eyes to observe the clouding or nonclouding of the mirror. Much home practice of this sort can be used.

Producing good voice quality. In most of the disorders of voice quality, it is advisable to work with the worst vowel first when the student attempts to produce clear and adequate phonation. Thus in the nasality case, the vowel on which the student shows the worst hypernasality is singled out for his first trials. An exception to this policy is found in the cleft palate and other organic disabilities, wherein one must often use the easier sounds first. Very little intensity should be used in the first attempts, and every type of available reinforcement should be employed. The hypernasality case should use warming-up exercises, such as yawning, puffing out the cheeks, blowing balloons, and other methods, to insure firm closure of the nasopharynx by the velum. Many of these exercises are given in the references. Care should be taken to prevent the student from constricting the nares during these performances. The student should use the mirror under the nostrils and the finger-septum contact to notice the first signs of nasal phonation. Often, a larger mouth opening or a slightly different tongue placement will help to keep the old habits from returning. As in the articulatory disorders, the actual attempt should be preceded by a review of the ear-training exercises. The teacher should use discrimination stimulation, giving the incorrectly nasalized vowel and then the normally phonated vowel, several times before request-

ing the student to make his first attempt. If this preliminary work has been carried out thoroughly, very little difficulty will be experienced, and vowels relatively free from excess nasality will be phonated.

Strengthening new voice quality. After this vowel has been produced correctly, the student should attempt to maintain and prolong it, paying a great deal of attention to the "feel" and the sound of it. The student must be cautioned to keep out all hypertension. Without changing facial, mouth, or body positions, he should then cease phonation, take a deep breath, and attempt to produce it again. Series of alternate phonations and silences should be produced on each exhalation. Whenever the vowel becomes too nasal, the student should be given a rest and the entire procedure of preliminary exercises repeated. Through careful work of this kind, the student will soon learn to produce the vowel correctly whenever he wishes. It is frequently necessary to insist upon sudden initiation of the vowel, using signal practice, in order to insure nasality-free vocalization at the very first instant of phonation. Often the student will fall into this error, making the old adjustments first, then changing to the new as the vowel is continued. This is fatal to the swift production needed in speech.

Although the worst vowel is the one first chosen for remedial work because of its contribution to better speech and because its successful production will influence the production of other defective vowels, we use the easiest consonant and vowel combinations in strengthening the new adjustments. The vowel should be practiced alone until it can be produced satisfactorily and consistently without the preliminary preparation. It is then wise to practice nonsense syllables in which the consonant follows the vowel (ob, op), then those in which the vowel follows the consonant (bo, po), and finally those in which consonants both

precede and follow the vowel (bop, pob). The first consonants used in these combinations should be the plosives *p, b, t, d, k*, and *g*, then the sibilants *s, z*, and *sh*, then the continuants *f, v, l*, and *r*, and finally the nasals *m, n*, and *ng*. Such a sequence will be found to be most effective. Familiar words can be used as well as the nonsense syllables without the encountering of much difficulty.

Making the new quality habitual. After the student has successfully mastered the majority of the above exercises, he can be required to read from copy carefully prepared to indicate his difficult sounds. Symbols and underlining can serve to teach him to reject the old mechanics prior to speech attempt and to prepare for adequate phonation. They may also be used to indicate the words on which the student should use negative practice. In voice disorders of all kinds, it is necessary to use a great deal of this negative practice, for the consciousness of faulty phonation will soon be lost unless frequently reinforced. As soon as the student has fairly good control of an isolated vowel, a nonsense syllable, or a familiar word, he should phonate it incorrectly to heighten the contrast. A brief illustration of such copy is as follows:

O/n this ^{*}joyful occasio/n ^{*}Alice was sitting o/n
the ^{*}back of the sa/me white swa/n.

Key to symbols: / Be sure to separate vowel from consonant!
* A difficult sound for you. Be careful!
* Use negative practice on this sound.
—Prolong this vowel.

During the early stages of treatment, it is wise to use the same reading or memorized material over and over again until the student has attained a rather good awareness of the sounds which are likely to require more care. Often it is wise to prolong the vowel presenting difficulty and, for a

late the vowels in other than his habitual manner. The opening of the mouth may be widened, increased in vertical dimension, or protruded. The tongue placement may be varied greatly during the maintenance of one vowel. The student should be required to vary these positions and the tenseness of the walls of the mouth and throat. These exercises will demonstrate that differences in quality can be produced, and often much better timbre will result. It is frequently necessary to teach a new manner of vowel articulation in order to get the desired quality. When denasality is due to habits formed during adenoidal and catarrhal childhood, voice retraining is necessary. The student should be required to snort the vowels and to work for nasalization of all speech. Humming exercises and the use of the mirror and finger-septum contact will usually produce the desired result. Different pitch levels will also produce better quality. The procedures for strengthening and habituating the new quality are similar to those used for hypernasality.

Falsetto voice. The falsetto voice, which is partly a disorder of pitch and partly one of voice quality, is still not thoroughly understood in terms of its manner of production. Negus¹⁵ declares that only the very edges of the cords vibrate and that they move upward and downward rather than outward and inward. When the higher falsetto notes are being produced, only a portion of the cords vibrate. In the male voice, the lowest notes cannot be produced in a falsetto, and the highest notes are more easily phonated in this manner. The falsetto is easily produced when phonating on inhalation, and it is seldom present in such biological activities as sighing or coughing. Although little air pressure is needed to produce this type of voice,

¹⁵ Negus, V. E., *The Mechanism of Phonation, Acta otolaryngology*, Stockholm, 1935, Vol. 22, pages 393-419.

This vowel can be phonated between sentences and between phrases in the same manner used by many normal speakers when they are at a loss for words.

Guttural voices. Some individuals are encountered whose voices probably merit the adjective "guttural" rather than "throaty." The terminology is no doubt somewhat dependent upon sex differences or pitch, since a voice which would be termed "throaty" in a woman is called "guttural" when it occurs in a male. A distinction is sometimes made in terms of the mechanics of phonation, guttural voices being due to partial vibration of the false vocal cords in addition to the normal activity of the true cords. Constriction of the pharynx seems to occur in both types of voice, and the treatment is the same for both.

Harsh voices. Harsh, piercing, or rasping voices seem to be accompanied by this false vocal-cord vibration. Voelker¹⁶ describes one form of the disorder as characterized by "a rattling, rumbling, cracking or ticker-like substitute for phonation." These extra vibrations range from six to thirty per second. Normal speakers often show this voice quality when grunting or in moments of indecision. It may be easily produced when vocalizing on inhalation. Voelker recommends breath training, speech with yawning, and vocalized sighing. The student must learn to hear these vibrations in his own speech before any therapy will be successful. Russell¹⁷ describes the strident, piercing voice as primarily due to raising the larynx up under the hyoid. He describes the subsequent tension as follows:

As the voice begins to get strident and blatant, one sees the red-surfaced muscles which lie above the vocal cords begin to form a tense channel and press upon the vocal cords themselves.

¹⁶ Voelker, C. H., "Phoniatry in Dysphemia Ventricularis," *Annals of Otology, Rhinology and Laryngology*, 1935, Vol. 44, page 471.

¹⁷ Russell, G. O., "Physiological Causes of Guttural and Piercing Deaf Voices," *Oralism and Auralism*, July, 1929.

should be designated and gradually extended so they will ultimately include all of his speech experiences. He should voluntarily practice his new type of voice in public speaking and in other emotionally loaded situations.

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A description of the formation of the voice mechanism, breath control, the resonators, consonant production, the vocal cords and their activity, the combined instruments, and a pronunciation chart.

2. Avery, E., Dorsey, J., and Sickels, V., *First Principles of Speech Training*, Chapter 3, New York, D. Appleton-Century Co., 1929.

This chapter on voice training includes voice production, the physical preparation for speech, results of faulty breath control and its correction, tone initiation, resonance, and the elements of tone.

3. Barrows, S. T., and Pierce, A. E., *The Voice: How To Use It*, Boston, Expression Co., 1933.

A book of exercises for voice improvement for those who have no serious defect in the vocal organs. It includes exercises for the control of the vocal mechanism, exercises for articulation, and exercises for tone.

4. Fletcher, H., *Speech and Hearing*, New York, D. Van Nostrand, 1929.

A scientific consideration of the speech mechanism and speech waves, music and noise, the hearing mechanism and methods of testing its acuity, and the perception of speech and music. Many figures of sound frequencies are included.

5. Hathaway, H., *What Your Voice Reveals*, New York, E. P. Dutton Co., 1931.

A booklet in popular vein stressing the importance of voice as a revelation of personal mood. Some general suggestions for pleasant voice and speech are given.

6. Holmes, L., *A Handbook of Voice Improvement*, Madison, College Typing Co., 1935.

This handbook considers breathing, voice placement, increasing

the pitch range, articulatory agility, vowels and consonants, and faulty types of voice, and includes some practice material.

7. Orr, F. W., *Voice for Speech*, New York, McGraw-Hill, 1938.

A text based on the principle that one should not try to develop any particular type of voice, but a vocal responsiveness to personal attitudes and purposes. It considers the coördinating, breathing, tone-initiating, and tone-modulating systems—discussing, in turn, the anatomy and physiology of each system, the abnormalities of each, the diagnosis of those abnormalities, and methods of establishing the normal. Some diagnostic tests and practice materials are included.

8. Russell, G. O., *Speech and Voice*, New York, Macmillan Co., 1931.

A book containing a series of speech and voice cavity X-rays, with a special study of the functions of the interior larynx. There are chapters for the teacher of the deaf, singing teachers, and teachers of foreign language. The causes of voice quality differences are considered in a technical way—and there are many charts of parts of the speech mechanism.

Pathological Voice Defects

1. Koeppe-Baker, H., "A Rare Case of Aphonia Organica," *Archives of Speech*, 1936, Vol. 1, pages 231–247.

A description of the methods of treatment and reëducation in a case of laryngeal web, with accompanying pictures.

2. Leobarg, J. J., "Voice and Speech, a Neglected Medical Study," *Laryngoscope*, 1920, Vol. 30, pages 711–713.

A plea for the training of voice specialists in the postgraduate medical schools. The author suggests the adoption of a specific program of training, including anatomy and physiology of the vocal apparatus, mechanism of correct respiration in voice production, hygiene and care of the voice, affections of voice in singers and speakers, and treatment in general.

3. West, R., Kennedy, L., and Carr, A., *The Rehabilitation of Speech*, Chapters 7 and 25, New York, Harpers, 1937.

Chapter 7 considers the dysphonias (vocal disturbances) caused by pharyngeal and laryngeal deformities, and suggests voice training for the irregular glottis, for the insufficient laryngeal band adduction, for stenoses of the vocal outlet, and for the laryngectomized patient. Chapter 25 discusses the relationship between

voice disorders and emotional disturbances and gives general means for rehabilitating the voice.

Voice and Hearing

1. Kerridge, P. M. T., "The Effect of Hearing on Speech," *Journal of Physiology*, 1936, Vol. 87.

Common speech defects are arranged in order of increasing deafness as follows: 1. monotony of tone; 2. omission of high-frequency sounds such as *s*, *sh*, and *ch*; 3. unnatural intonation; 4. poor phrasing and lack of rhythm; 5. slow speed; and 6. bad articulation.

2. Shaw, O. M., "Study in the Analysis and Correction of the Speech of the Hard of Hearing," *Proceedings American Speech Correction Association*, 1934, Vol. 5, pages 53-67.

A description of the speech of nine high school children in a state institution for the deaf, the methods used in their speech retraining, and the results obtained.

Voice and Puberty

1. Jerome, E. K., "Change of Voice in Male Adolescents," *Quarterly Journal of Speech*, 1937, Vol. 23, pages 648-653.

A controlled study of the relation of change of voice to chronological age, mental age, and skeletal age.

2. Seth, G., and Guthrie, D., *Speech in Childhood*, pages 200-203, London, Oxford University Press, 1935.

A short description of change of voice in both boys and girls, and an explanation of common voice disorders at puberty.

Exercises for Velum, Jaw, Lips, and Tongue in Modifying Voice

1. Barrows, S. T., and Pierce, A. E., *The Voice: How To Use It*, Part I, pages 28-34, Boston, Expression Co., 1933.

2. Case, I. M., and Barrows, S. T., *Speech Drills for Children in the Form of Play*, Boston, Expression Co., 1929.

3. Fairbanks, G., *Voice and Articulation Drill Book*, Iowa City, Athens Press, 1937.

Overuse and Strain of the Voice

1. Russell, G. O., "Etiology of Follicular Pharyngitis, Catarrhal Laryngitis, So-Called Clergyman's Throat, and Singer's Nodes," *Journal of Speech Disorders*, December 1936, pages 113-122.

A discussion of the symptoms, etiology, and suggestions for treatment of the "strained" voice.

2. West, R., Kennedy, L., and Carr, A., *The Rehabilitation of Speech*, pages 96-100, Chapter 25, New York, Harpers, 1937. The first reference gives symptoms and causes for stenosis of the larynx and a description of stenosis of the vocal outlet. Chapter 25 discusses disturbances in vocal quality of long standing which are amenable to speech training.

Relaxation

1. Case, I. M., and Barrows, S. T., *Speech Drills for Children in the Form of Play*, pages 13-18, Boston, Expression Co., 1929. A list of drills for teaching children to relax before speech drills are given to them.

2. Jacobson, E., *Progressive Relaxation*, Chicago, University of Chicago Press, 1938.

A practical clinical discussion of the method of progressive relaxation in which the person is trained to reduce or to completely eliminate muscular tension. A long bibliography is given.

3. Koepp-Baker, H., *Handbook of Clinical Speech*, Vol. 1, pages 162-187, Ann Arbor, Edwards Brothers, 1936. Some general instructions for relaxation from Dr. Jacobson's book are given, and 15 relaxation assignments with accompanying illustrations are included.

Emotional Retraining

See references at the end of Chapter V.

Pitch Disorders

1. Avery, E., Dorsey, J., and Sickels, V., *First Principles of Speech Training*, pages 62-67, New York, D. Appleton-Century Co., 1929.

A study of the physical properties of tone, with mention of their abnormalities.

2. Barrows, S. T., and Pierce, A. E., *The Voice: How To Use It*, pages 145-155, Boston, Expression Co., 1933.

A classification of the defects of pitch, with remedial exercises for each type.

3. Crews, L., "A Case of Juvenile Voice," *Proceedings American Speech Correction Association*, 1936, Vol. 6, pages 142-149.

The description of the treatment of a youth with a child's voice.

4. Gilkinson, H., "A Study of the Relationship Between

Psychological and Physical Measures of Masculinity," *Genetic Psychology Monographs*, 1937, Vol. 19, pages 105-154.

This study gives methods for determining the habitual pitch levels, with an account of the reliability of the measures.

5. Heltman, H., "Reëducation Techniques in Speech Correction," *Proceedings American Speech Correction Association*, 1936, Vol. 6, pages 130-141.

Suggested reëducation for voice disorders on the basis of the thesis that all speech is the modification of more primitive laryngeal and articulatory utterances.

6. Holmes, L., *A Handbook of Voice Improvement*, pages 29-31, Madison, College Typing Co., 1936.

A description of the faulty qualities of voice resulting from the use of an abnormal pitch level.

7. Ridpath, R., "The Falsetto Voice," *Laryngoscope*, 1928, Vol. 38, pages 469-471.

A résumé of the knowledge on the subject of the falsetto voice. He cites the two theories concerning the cause of falsetto voices which are presented throughout the literature on the subject.

8. Root, A. R., "The Pitch Factor in Speech; A Survey," *Quarterly Journal of Speech*, 1930, Vol. 16, pages 320-335.

A survey of the historical concepts of pitch and pitch changes, with a summary of recent experimental investigations in the field. A long bibliography is included.

Intensity Disorders

1. Gray, G. W., and Wise, C. M., *The Bases of Speech*, pages 125-126, New York, Harpers, 1934.

A short description concluding that extreme clavicular breathing will produce inadequate vocal intensity.

2. Marsh, F. D., "Functional Aphonia (Some Observations on Its Clinical Aspects)," *Lancet*, 1932, Vol. 2, pages 289-290.

A summary of sixteen cases of functional aphonia seen by the author. He shows that a determining cause for the disorder is often present, and should be treated by direct dealing with the septic focus.

3. Watkins, D. E., *An Introduction to the Art of Speech*, pages 97-123, New York, W. W. Norton and Co., 1934.

This chapter deals with the intensity of vocal sounds, and considers resonance, loudness, the amount and degree of force, with illustrative material for both stress and force.

vowels of both groups of speakers had more nasal air discharge than the middle vowels.

7. Manser, R. B., *Speech Correction on the Contract Plan*, Chapter 2, New York, Prentice-Hall, 1935.

A brief description of changing the pitch, breathiness, throatiness, hoarseness, nasality, and denasalization, with a few remedial suggestions.

8. Parsons, F., "Speech Training for Cleft Palate Patients," *Proceedings Royal Society of Medicine*, 1934, Vol. 27, pages 1301-1303.

Suggestions and exercises for speech retraining of cleft-palate patients based on the belief that their speech difficulties result from the following three facts: the physical inability to obtain a closure of the nasal passage, a too-stiff upper lip, and lack of confidence.

9. Poe, D. L., "Further Studies of Rhinolalia Aperta," *Archives of Pediatrics*, 1933, Vol. 50, pages 147-157.

A further report on a previous study on nasal speech in children resulting from tonsilectomy. The author believed the underlying cause to be the pain incident to the operation. He suggests the use of electric current, stretching, massaging, and speaking exercises as the correct therapy in the elimination of excess nasality.

10. Raubicheck, L., Davis, E. H., and Carll, A. L., *Voice and Speech Problems*, pages 326-330, New York, Prentice-Hall, 1931. A consideration of nasality and denasalization, with a list of exercises for the treatment of nasality.

11. Slattengren, H., "Nasal Speech," *Quarterly Journal of Speech*, 1934, Vol. 21, pages 542-546.

Drills for helping a child learn to resonate the *m*, *n*, and *ng* sounds.

12. Ward, I. C., *Defects of Speech*, pages 43-47, New York, E. P. Dutton Co., 1923.

A brief discussion of nasal twang and adenoid speech, with some corrective suggestions.

13. West, R., "Recent Studies in Speech Pathology," *Proceedings American Speech Correction Association*, 1936, Vol. 6, pages 44-49.

An important discussion of nasality, considering especially the functions of the velum and the nares, and the nature of cul de sac resonance.

The Treatment of Stuttering

The Problem of Stuttering

In Chapter IV we defined stuttering as the disorder characterized by blockings, prolongations, or repetitions of words, syllables, sounds, or mouth postures, all of which (together with the contortions or devices used to avoid, postpone, disguise, start, or release their speech abnormality) produce interruptions and breaks in the rhythmic flow of speech. This is admittedly more of a description than a definition, and it indicates the complexity of the disorder. In its mildest form, its possessor is often entirely unaware of the interruptions. In very severe stutterers, the interruptions are accompanied by contortions so grotesque that they almost resemble spastic and epileptic seizures. In adult stutterers, an almost infinite variety of stuttering symptoms may be found, although in young children, when the disorder first tends to manifest itself, the symptoms are largely confined to the above-mentioned repetitions and prolongations. These seem to be the only symptoms common to all stutterers.

Stuttering is no respecter of persons. It afflicts king and beggar, savant and ignoramus, Hebrew and Hottentot, virtuous and sinful, and all other categories you might choose. Moses himself is said to have stuttered, and we know that King Charles I, Charles Lamb, and Charles Darwin (to select but three of the millions of people who have experienced this disorder) were likewise afflicted. There are

approximately 1,400,000 stutterers in the United States alone, and one of every one hundred children is destined to suffer from this abnormality.

It is obvious that so universal and dramatic a disorder would provoke a great many attempts to cure it or alleviate its distress, and the history of these attempts comprises a large share of the history of speech correction. Witchcraft, the surgeon's knife, appliances for the tongue, drugs, hypnotism, psychoanalysis, arm swinging, and a host of other devices and methods have been employed, and a few "cures" seem to be obtained by any method, no matter how grotesque. Naturally, the charlatans and quacks have flourished in so fertile a field, victimizing many thousands of stutterers every year. The medical profession has largely ignored them, and only in the last few years have the scientists concerned themselves with their urgent problem. Much of the research which has been carried out has been sterile, resulting in a large number of antagonistic theories whose proposers have spent more time in defending their theories than in testing to discover more pertinent facts about the abnormality.

Theories concerning the nature and cause of stuttering. Although more research has been carried out on stuttering than on any other speech disorder, speech correctionists have failed to agree on any one explanation of its nature and its cause. The reasons for this lack of agreement have been the complexity of the disorder and the difficulty experienced by experimenters in controlling all of the many physiological and psychological factors which affect its frequency, form, and duration. As the history of medicine clearly demonstrates, whenever a disorder or disease is produced or affected by many different factors, many conflicting theories arise, many authorities wrangle, and many kinds of medicine or treatment are used.

Most of the theories of stuttering are based upon obser-

vation rather than research. Many of them confuse the nature of the stuttering block with its causation, although both phases of the disorder should be investigated independently. The advanced student must be cautioned to scrutinize the research cited in evidence of any theory and to judge its adequacy in terms of all the phenomenology of stuttering. Every theory explains certain of the characteristics of some stuttering, but the author knows of none which is sufficiently comprehensive or substantiated to cover all the facts. When considering each theory, the student should ask himself four questions: (1) What is the cause mentioned by the authority who espouses this theory? (2) What is said to be the nature of the actual symptoms shown by the stutterer, the repetitions, prolongations, forcings, head-movements, fears, and so on? (3) How does he explain the variation in stuttering symptoms from individual to individual, or the change in the symptoms of the same stutterer as he grows older? (4) What research findings does he offer in support of these statements and what evidence seems to contradict them?

Almost every theory, including that espoused by the author of this text, seems to rest on a very insecure foundation when subjected to such a critical scrutiny. Nevertheless, it seems wiser to select some explanation which seems to fit most of the characteristics of stuttering and to carry out research rather than to shrug our shoulders and wait for posterity to do the formulating and experimenting for us. Meanwhile stutterers are in great need of help and it is certain that we do know enough to do a great deal for them.

It is difficult to condense the statement of any theory without distorting it, and so the student is referred to the references at the end of this chapter. Bender and Kleinfeld¹ enumerate and describe fifteen different major theories, but these probably can be reduced to six by combining

¹ Bender, James F., and Kleinfeld, Victor M., *Principles and Practices of Speech Correction*, pages 241-266, New York, Pitman, 1938.

those which are variants of the educational theory. These six are the educational, psychoanalytical, neurological, neurotic, imagery, and inhibitory theories. The educational theory holds that stuttering is a bad habit originating in the natural hesitations of children's speech and perpetuated by penalty and fear. Stoddard,² McDowell,³ and Russell⁴ are its exponents. The psychoanalytical theory holds that stuttering is the result of a fixation at the oral or anal stages of sexual development and that its symptoms are movements akin to those of nursing, micturition, or the expulsion of the flatus. Coriat⁵ and Clark⁶ are its chief exponents. The neurological theory is variously stated, but its major tenets are that the paired musculature used in speech does not receive properly timed nervous impulses from the various integrating centers of the central nervous system. This condition is thought to be brought about by interference of the thalamus, cerebellum, or nondominant hemisphere with the integrations of the dominant half of the cerebral cortex. The stutterers are said to possess less unilateral cerebral dominance than normal speakers, and hence are more susceptible to breakdown. The chief exponents of this theory are Orton,⁷ Travis,⁸ and Bryngelson.⁹

² Stoddard, Clara B., "The Correction of Stammering in Detroit," *A Symposium on Stuttering*, Madison, Wisconsin, College Typing Co., 1931, pages 92-99.

³ McDowell, E., "Educational and Emotional Adjustments of Stuttering Children," *Teachers College Contributions to Education*, 1928, No. 314, pages 1-59.

⁴ Russell, G. O., "Neuro-pedagogical Process of Treating Stammerers and Stutterers at Ohio State University," *A Symposium on Stuttering*, Madison, Wisconsin, College Typing Co., 1931, pages 188-192.

⁵ Coriat, I. H., "Stammering. A Psychoanalytic Interpretation," *Nervous and Mental Disease Monographs*, 1928, No. 47, pages 1-68.

⁶ Clark, P. L., "Study of the Psychogenesis of Confirmed Stammerers," *Journal of Nervous and Mental Diseases*, 1926, Vol. 63, page 238.

⁷ Orton, S., *Reading, Writing, and Speech Problems in Children*, New York, W. W. Norton and Co., 1937.

⁸ Travis, L. E., *Speech Pathology*, New York, D. Appleton-Century Co., 1931.

⁹ Bryngelson, B., "Sidedness as an Etiological Factor in Stuttering," *Journal of Genetic Psychology*, 1935, Vol. 47, pages 204-217.

The neurotic theory considers stuttering to be a symptom of a basic personality problem, of a maladjustment to the demands of normal life. The hesitations and anxieties are considered as symptoms of his attitudes toward life itself. The chief exponents of this theory are Fletcher,¹⁰ the Blantons,¹¹ and Brown.¹² The imagery theory claims that the stutterer lacks the visual or auditory imagery supposed by those who espouse this theory to be essential to normal speech. Swift¹³ and Bluemel¹⁴ are the chief exponents, although the latter has recently shifted his position. The inhibitory theory, now proposed chiefly by Bluemel,¹⁵ claims that stuttering arises when the conditioned response of speech is inhibited by some traumatic experience, and the inhibition itself is conditioned to certain word cues or features of the speech situation. Criticisms of some of these theories are given in the articles and texts by Bluemel,¹⁶ Brown,¹⁷ Johnson,¹⁸ West,¹⁹ and Hahn.²⁰

Research on stuttering. To summarize all of the research on the nature of stuttering would require far more

¹⁰ Fletcher, J. M., *The Problem of Stuttering*, New York, Longmans, Green & Co., 1928.

¹¹ Blanton, S. and M. G., *For Stutterers*, New York, D. Appleton-Century Co., 1936.

¹² Brown, Frederick W., "Personality Integration as the Essential Factor in the Permanent Cure of Stuttering," *Mental Hygiene*, 1933, Vol. 17, pages 266-277.

¹³ Swift, Walter B., "A Psychological Analysis of Stuttering," *Journal of Abnormal and Social Psychology*, 1915, Vol. 32, pages 3-13.

¹⁴ Bluemel, C. S., *Mental Aspects of Stuttering*, Baltimore, Williams & Wilkins Co., 1930.

¹⁵ Bluemel, C. S., *Stammering and Allied Disorders*, New York, Macmillan Co., 1935.

¹⁶ *Ibid.*

¹⁷ Brown, Frederick W., "Viewpoints on Stuttering," *American Journal of Orthopsychiatry*, 1932, Vol. 2, pages 230-241.

¹⁸ Johnson, Wendell, "An Interpretation of Stuttering," *Quarterly Journal of Speech*, 1933, Vol. 19, pages 70-75.

¹⁹ West, Robert, "The Phenomenology of Stuttering," *A Symposium on Stuttering*, Madison, Wisconsin, College Typing Co., 1931, pages 1-6.

²⁰ Hahn, E., "An Integration of Stuttering Therapies," *Journal of Speech Disorders*, 1937, Vol. 2, pages 87-94.

space than is available in this text, but we do include certain of the findings. The majority of these must be regarded as tentative, since the original experiments have not been repeated and checked.

All authorities agree that there are more male than female stutterers, that the onset of the disorder occurs during early childhood, and that the disorder tends to run in families and some hereditary factor exists, although the laws which govern it have not been determined. Stutterers do not differ from nonstutterers in intelligence, organic defect, or pathology of the vocal tract. Stutterers are markedly inferior to normal speakers in the ability to use paired musculatures in rapid rhythmic performance, even in activities foreign to speech. The average stutterer is retarded in school, despite his normal intelligence—a finding which may be due to his emotional problems or to his retardation in silent, as well as oral, reading.

A great many studies may be found in the literature on the relationship existing between laterality (sidedness) and stuttering. Besides the 34 references summarized in the article by Travis and Johnson (see list of references at the conclusion of this chapter) there are a number of more recent studies which tend to corroborate the conclusion reached by the above-mentioned authors—*i.e.*, “. . . on the whole, stutterers differ from normal speakers in being characterized by a relative lack of unilaterality of motor lead control.” It is difficult for the student who peruses this literature to resist the conviction that the underlying neurophysiological condition responsible for stuttering is in some manner related to confused laterality. There have been few investigators, however, who have concluded that the only cause or condition responsible for this confused laterality was a shift of handedness in the early years. Nevertheless, the latter thesis has been frequently attacked, probably because its critics failed to see that peripheral

handedness is far from being the only manifestation of sidedness, and because many instances of a shift of handedness without subsequent stuttering could be discovered. The research on laterality and its relation to stuttering has made a very definite contribution to our knowledge of the disorder, and every student of speech correction should become familiar with the concept of cerebral dominance as formulated by Travis and as criticized by Brown and Bluemel.

Marked differences between the breathing of stutterers and nonstutterers during speech have been repeatedly described in the literature. These breathing abnormalities include: (1) prolonged inspiration or expiration; (2) strikingly different simultaneous breathing patterns for abdomen and thorax; (3) speech attempt during inhalation; (4) synchronism of laryngeal and respiratory movements; (5) diametrical opposition of the action of the thorax to the abdomen; (6) speech attempt using residual air; (7) the presence of a marked tremor; (8) shallow and irregular respiration; and many others. Although breathing abnormalities occur to a much greater extent in adult and severe stutterers, they are also found in children.

In adults, stereotyped and consistent patterns of breathing abnormality are found, and these are occasionally rehearsed prior to speech attempt. Many stuttering blocks do not manifest themselves in any respiratory irregularity. The breathing disturbances in stuttering are probably the result of the vocal struggle rather than its cause. Devices such as an initiatory gasp, used deliberately for timing the speech attempt on a feared word, produce many of the above symptoms. The use of breathing exercises in the treatment of stuttering has been generally discarded by most clinicians.

Other phenomena, present in stutterers and not in non-stutterers, which have been demonstrated by research are:

(1) the presence of tonal rigidity in the voice; (2) extremely brief approximation of the vocal bands before and between tones; (3) ability to read mirror script; (4) disarrangement of the pupillary reflex; (5) odd proportions of inorganic phosphates, potassium, protein, sugar, and calcium found in the blood; (6) an increase in brain volume during block; (7) the presence during block of marked vaso-constriction; (8) incoördination of the limbs or eyes during speech block; (9) brain-wave characteristics; (10) poor ability in performing a temporal pattern with the paired musculature.

Recently, research has turned to the investigation of the psychology of stuttering, especially in terms of the adult stutterer. Some of this has been mere armchair psychology similar to the article by Wilde,²¹ who finds that the stutterer's situation is explained on the hypothesis that the mind, infected by the will, disturbs the soul-fantasy speech movements and becomes the master, whereas it should be the servant.

The better studies have shown the following important facts: (1) Most of the adult stutterers have marked fear of words and certain speech situations. (2) These fears are set off by cues which are associated with general or specific memories of past speech unpleasantness and abnormality. (3) The greater the penalty placed upon stuttering, the more frequent and severe are the blocks. (4) The fear is increased by avoidance of speech attempt on feared words or in feared situations. (5) Fear is frequently accompanied by rehearsal of the abnormality prior to speech attempt and by preparatory sets to stutter in certain specific ways. (6) Stutterers can frequently predict the occurrence and duration of their blocks. (7) Fear often manifests it-

²¹ Wilde, F., "Stottern im Licht der Klageschen Philosophie," *Deutsche Sonderschule*, 1937, Vol. 4, pages 532-541.

self in the form of diametrically opposed urges to attempt and to retreat from the speaking of the word feared. (8) The cues which set off the fear may be classified as the awareness of the following factors as tending to precipitate stuttering: certain sounds or classes of sounds (vowels or consonants, plosives or sibilants, and so on), the meaning of the word, the unfamiliarity of the word, the position of the sound in the word, the position of the word in the sentence, the relative difficulty of articulation, the inexact word, accented syllables, and confusions of all kinds. The cues which set off situation fear are the perception of the following factors in the speech situation: similarities to situations in which speech unpleasantness has been experienced, the unexpectedness of the situation, expectation of interruption or help with the difficult word, pressing need for immediate or efficient communication, the probabilities of such social penalties as laughter, mockery, and impatience or rejection, and many others.

Stutterers' attitudes toward their disorder have been investigated, and, although many evidences of social and emotional maladjustment have been noted, most of them seem to be the results of stuttering rather than its causes. These attitudes vary all the way from a casual acceptance of the disorder as a minor irritation to definitely psychopathic disturbances. Although exceptions occur, the more severe the symptoms of the disorder, the more abnormal are the attitudes. Stuttering is generally a social and economic liability and is penalized as such. Severe stutterers tend to select occupations in which speaking is unimportant.

The Nature of the Stuttering Block

Although the exact nature of the stuttering block has never been determined, most of the evidence seems to show that it consists of a temporary inability to move certain speech musculatures. For an instant in the movement se-

quence that is necessary in order to produce a spoken word, the muscles of the tongue, jaws, or other speech structures seem unable to contract. The movement sequence is thereby interrupted and blocked.

The neuromuscular block. This temporary inability, we believe, is due to the lack of simultaneous or similar volleys of nervous impulses sent from the brain to the paired speech musculatures. One side of the tongue, for example, may get its volley before the other, and, as a consequence, the tongue cannot make its appropriate movement for an instant. Certain experimental evidence tends to corroborate this view,²² but theory alone can as yet explain why the volleys of nervous impulses do not arrive at the paired speech muscles at the same time. Perhaps the thalamic discharge due to fear or excitement interferes with the normal integrations of cortical activity and reduces the slight margin of dominance which one cortical hemisphere is said to possess over the other in stutterers. Perhaps other subcortical levels suddenly seize a measure of control over the speech function. At any rate, the stutterer finds himself unable to move a certain speech structure when it is necessary for him to do so if he is to speak the word.

²² Travis, L. E., "Dissociation of the Homologous Muscle Function in Stuttering," *Archives of Neurology and Psychiatry*, 1934, Vol. 31, pages 127-133.

Hunsley, Y. L., "Dysintegration in the Speech Musculature of Stutterers During the Performance of a Non-vocal Temporal Pattern," *Psychological Monographs*, 1937, Vol. 49, No. 1, pages 32-49.

Strother, Charles, "A Study of the Extent of Dyssynergia Occurring during the Stuttering Spasm," *Psychological Monographs*, 1937, Vol. 49, pages 108-127.

Blackburn, W. B., "A Study of Voluntary Movements of Diaphragm, Tongue, Lips, and Jaw in Stutterers and Normal Speakers," *Psychological Monographs*, 1931, Vol. 41, pages 1-13.

Seth, G., "An Experimental Study of the Control of the Mechanism of Speech, and in particular of that of Respiration, in Stuttering Subjects," *British Journal of Psychology*, 1934, Vol. 24, pages 375-388.

West, Robert, "A Neurological Test for Stutterers," *Journal of Neurology and Psychopathology*, 1939, Vol. 38, pages 114-123.

This inability, we believe, is due to the lack of the simultaneous arrival of appropriate nervous impulses in the two halves of one or more of the speech structures.

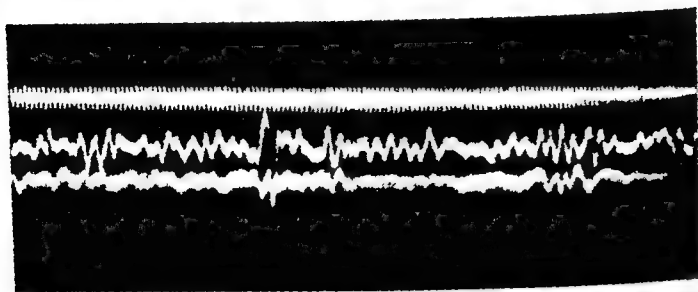


Fig. 20. Action current record showing unequal reception of nervous impulses in the paired masseter muscles during the stuttering act. *Upper line:* time in thousandths of a second; *middle line:* action currents in right masseter; *lower line:* action currents in left masseter.

Conscious and habitual reactions to the fear or experience of the neurological block. We have said that this inability to utilize speech structures is a temporary one. Indeed, most of the experimental evidence indicates that it is of extremely short duration, usually being but the fractional part of a second.²³ And yet the symptoms manifested by the adult stutterer often last for minutes. This seeming confusion is removed when we consider the speech abnormality itself. Stuttering, as the term is commonly used, is nothing but a wastebasket term. It includes symptoms of all varieties, from repetitions and prolongations to tongue protrusions and jerkings of the feet. Many of these so-called symptoms, however, are nothing but reactions to the fear of stuttering.²⁴ They occur prior to speech attempt.

²³ Strother, Charles, "A Study of the Extent of Dyssynergia Occurring during the Stuttering Spasm," *Psychological Monographs*, 1937, Vol. 49, pages 108-127.

²⁴ Johnson, W., and Knott, J. R., "The Moment of Stuttering," *Journal of Genetic Psychology*, 1936, Vol. 48, pages 475-480.

They are often habitual in nature, with a history of having been first adopted as deliberate devices to avoid, disguise, or postpone the blocking.²⁵ Other reactions seem to be due to the effort made by the stutterer to release himself from block. The important point is that many of the so-called symptoms of stuttering are not true symptoms, but are habitual reactions to the fear or to the occurrence of block.²⁶ Thus the true neuromuscular block in stuttering may be very short and yet may be incorporated within a speech abnormality of extremely long duration. While the neuromuscular blocks form the nucleus of the disorder, it is obvious that treatment based upon the modification and elimination of fear and release reactions will be of great value in diminishing the handicap.

Automatic reactions to neuromuscular blocks: repetition and prolongations. Besides these conscious or habitual reactions to fear or experience of the speech block, there are other reactions which seem to be relatively involuntary and automatic.²⁷ The latter are the prolongations and repetitions that form so large a share of the stutterer's abnormality when it first begins. Many authorities have considered these to comprise the stuttering block itself. It is our contention that these automatic repetitions and prolongations are reactions to the neurological block, and that they may be explained as the natural response of any organism to the sudden interruption of a predetermined and habitual sequence of movements. In typing and piano-playing, for instance, the sudden sticking of a key will produce similar repetitions and prolongations of a preceding

²⁵ Wyllie, J., *Disorders of Speech*, pages 18-19, Edinburgh, Oliver and Boyd, 1894.

²⁶ Van Riper, C., "The Effect of Devices for Minimizing Stuttering on the Creation of Symptoms," *Journal of Social and Abnormal Psychology*, 1937, Vol. 32, pages 185-192.

²⁷ Froschels, E., "Beitrag zur Symptomatologie des Stotterns," *Monatsschrift f. Ohrenheilk.*, 1921, pages 1109-1110.

posture. Experimental evidence on this point may be found in the article by Bonnet.²⁸

In early stuttering, the sequence of the stuttering act may be described as follows. The child starts the series of simultaneous and successive movements which produce a given word. Suddenly the two halves of the tongue or some other speech structure fail to get their appropriate nervous impulses, and the structure cannot make its necessary movement. The sequence is thereby interrupted, and the preceding movements are repeated or prolonged. Thus the primary symptoms, repetitions and prolongations, are themselves not the actual block, but automatic reactions to it.

The Development of Stuttering

The development of overt symptoms. Although the actual neurological block seems to be of such short duration, the average adult stutterer presents a mass of severe contortion and long abnormality in his speech, which has baffled both the stutterer and his teacher. If the fundamental blocking in stuttering is the same short interruption in the operation of the speech mechanism, the wide variety of observable symptoms must be explained before intelligent therapy can be initiated. We must know why one stutterer forces and protrudes his tongue, why another blinks his eyes and jerks his head, and why still another may go through strange bodily contortions when a stuttering block occurs.

A study of the stuttering phenomenon as it first appears in little children gives us the first key to the solution of this problem. When a child first begins to stutter, the only observable reactions are either rapid, easy repetitions or short, effortless prolongations. Bluemel has called these

²⁸ Bonnet, C., *Etude Critique sur Parente Morbide du Bégaiement avec les Tics et les Crampes Fonctionnelles*, pages 52-54, Bordeaux, 1906.

the "primary symptoms of stuttering."²⁹ The child is not aware of their appearance, and considers them a part of his way of communicating. Stutterers in this first stage present a general similarity of symptoms, a similarity which is not found in adult stutterers.

Sooner or later, however, this period of nonreacting acceptance is disturbed.³⁰ Parents, teachers, or playmates react emotionally or call attention to the speech blocks, and the child becomes aware of the fact that his manner of speaking is unacceptable to others. This penalizing of the automatic and unconscious reactions to the neuromuscular block is the usual way in which the child becomes conscious of his stuttering. He may also become aware of his stuttering in another manner. In the stress of hurried or important communication, he may first notice the slight blocks as obstacles to rapid and fluent speech. This thwarting is unpleasant to the child, and his first reaction of surprise and bewilderment is often followed by one of irritation. He realizes that there is something about his speech which others dislike, and which interrupts his communication in some mysterious but objectionable manner. He is labeled as a stutterer and becomes vividly aware of his primary symptoms.

Behavior indicative of this awareness soon appears. The once unnoticed repetitions and prolongations are followed by sudden pauses. The child begins to force or struggle with the speech attempt. The sound, word, phrase, or even the whole sentence is repeated. The rate, pitch, or intensity of succeeding words is altered. The speech attempt is given up, or the child leaves the speech situation. Compensatory behavior such as shouting, crying, laughing, spit-

²⁹ Bluemel, C. S., "Primary and Secondary Stuttering," *Proceedings of the American Speech Correction Association*, 1932, pages 91-102.

³⁰ Van Riper, C., "The Growth of the Stuttering Spasm," *Quarterly Journal of Speech*, 1937, Vol. 23, pages 70-73.

ting upon an auditor, hitting a playmate, or indulging in a temper tantrum may occur. Very soon primitive devices of release are attempted, and the child reacts to the feeling of a thwarting and unpleasant block by forcing. He increases the tension of the chest and mouth musculature, employing gross bodily movements at the same time and using unnecessary force in articulation. This frequently causes a rise in the pitch of the vowel. When a repetition is felt, the child quickly interrupts it and pauses before he attempts the word again.

Development of fears and mal-attitudes. As soon as the child recognizes the unpleasant aspect of his speech, he begins to fear stuttering.³¹ This is a natural development, since the basis of fear is the expectation of unpleasantness. This expectation may first be related to a general situation, or may be specifically related to a certain word on which trouble previously occurred. Study of the growth of this latter expectancy shows that the first "Jonah" (or feared) words or sounds which develop are either (1) those which by frequency of occurrence under communicative stress have had more association with past stuttering, or (2) those which have been severely and vividly penalized by other people when a block appeared on them. The first situation fears develop in the same way.

Gradually these fears spread to other words and situations.³² As the fears increase, they become attached to certain sounds. Words themselves become invested with various other cues which set off a specific expectancy of stuttering. These cues have been mentioned previously in this chapter, and all of them can become vivid and terrifying signals of approaching word difficulty. Words become

³¹ Fogerty, E., *Stammering*, pages 12-23, New York, E. P. Dutton & Co., 1930.

³² Boone, E. J., and Richardson, M. A., *The Nature and Treatment of Stammering*, pages 110-114, New York, E. P. Dutton & Co., 1932.

things. Letters become either hard or easy. In a similar manner, other cues develop which precipitate fear of stuttering in a general situation. These, too, have been cited in the first part of the chapter. This generalized or situation expectancy often involves visualization of the abnormality of the situation, and a subsequent rehearsal of the words to be used. Such a rehearsal arouses specific word fears, and intensifies the expectation of trouble.

When a stutterer has developed such decided fears of unpleasantness, both on specific words and in general situations, he immediately begins to devise tricks to prevent or reduce that unpleasantness. Such devices have been observed in children only four years old, and nearly every adult stutterer exhibits them in either voluntary or automatic form. These expectancy techniques at first offer a temporary relief, but finally become only an habitual reaction to the fear of block, and a part of the handicap.

How reactions to fear or experience of stuttering become habitual symptoms. There are four major types of expectancy devices: those of avoidance, those which postpone the speech attempt, those which are used as "starters" to terminate the postponement and initiate the speech attempt, and, finally, those of anti-expectancy. Examples of each of these secondary symptoms are given in Chapter IX in the section concerning stuttering. The student should review this material and be able to recognize these secondary symptoms at sight.

In addition to these reactions to fear, we find the release reactions which occur after the stutterer has experienced the actual block. In general, there are only two main types of release symptoms: (1) those with which the word is completed in some manner after the block occurs, and (2) those which involve a cessation of the speech attempt and a retrial. Among the observable release devices of the first type are: to continue the word with increased force or ten-

sion on the speech muscles, to interrupt prolongation and finish the word, to continue with a changed voice pitch, to stop briefly and finish the word, and to continue with speech on inhalation. In the second class we find these reactions: to stop at the feeling of block and try the entire word again, to stop and use some starting device on the retrial, to stop and use a distraction, to stop and assume a confident behavior, to stop and postpone the new attempt for a time, to stop and avoid the word, and to stop and wait until almost all breath is gone, subsequently saying the word on residual air.

A stutterer may use any number of these expectancy and release devices in an attempt to make his speech effort easier and less obvious. At first many of those tricks do serve such a purpose. A slight *a* used as a starter may initiate a word seemingly impossible to utter; a word substituted for one which is feared may completely disguise any sign of stuttering abnormality; a slight force on release may bring the word to completion with little difficulty. But soon these techniques begin to lose their efficiency. The stutterer will have to use several *a*'s to initiate a word; spasms begin to occur on even the substituted words; and the force necessary to release a word increases to a degree where every bit of available breath is utilized in the activity. Not only must the tricks be exaggerated to produce any efficiency, but also they lose their voluntary characteristics. The stutterer cannot always use them when he wishes to do so, and he often finds them occurring whenever fear arises, even though he had no intention of using them.

It is in this way that the characteristic spasm pattern of a stutterer develops.³³ When devices are used so frequently in response to expectation of difficulty or the actual ex-

³³ Koepp-Baker, H., *Handbook of Clinical Speech*, Vol. 1, *Stuttering*, pages 103-104, Ann Arbor, Edwards Brothers, 1937.

perience of block, they cease to be voluntary and become habitual reactions to that block. Fear of a word brings an automatic reaction of the oft-practiced tricks previously used to reduce or counteract that fear; experience of a block brings an automatic manner of release. These reactions have become so closely integrated with the stuttering block that most people consider them the actual stuttering phenomenon. Indeed, they do comprise the greater part of the speech handicap and abnormality. But it is in this way that stutterers develop such widely varying symptoms. It is the devices which they have most often used as reactions to fear of block or to the actual blocking which ultimately attach themselves to the short neurological block and endow the stutterer's speech with a characteristic spasm pattern.



Fig 21 Photograph of a secondary stuttering symptom which developed from a trick of licking the lips to disguise the fact that the stutterer was postponing attempts on feared words

Treatment of the Young Stutterer in the Primary Stage of Stuttering

The young stutterer in the primary stage of the disorder presents a situation which calls for an entirely different type of therapy from that employed when the stuttering has developed into the advanced, or secondary, stage. The

primary stutterer reacts unconsciously and automatically to his blocks, and hence his symptoms are the short, effortless, rapid repetitions or equally short, easy prolongations.

Since the primary stutterer is not aware of any existing speech abnormality, he has developed none of the anticipatory reactions which result from fear of approaching word difficulty. His attitude toward his speech is normal, for not only is he unaware of his handicap, but also he is unconscious of any attendant social penalty. He may feel the blocks, but he accepts them as his normal way of communication, and not as an unacceptable method of speaking. The stuttering is not a constant experience but comes in waves. At some times a great many blocks occur, and at other times there is no evidence of interruption. Most of the stutterers in this stage are young children who have just begun to stutter, although we find a few adults who have not developed any other reactions toward their blocks except these easy, automatic ones, and who have built no insecurities around that difference.

The object of treating the young primary stutterer, then, is to handle the speech problem in such a way that he will not develop any of the reactions to his blocks which would send him into the secondary stage. If he can be kept in the primary stage, where only brief repetitions and prolongations occur, his chances of outgrowing the disorder will be much greater.

The primary symptoms of stuttering, repetitions and prolongations and hesitations, are not uncommon even among adults and are found much more frequently in almost all children. Any condition which produces communicative pressure, excitement, fear, or stress of any kind increases the number of these symptoms. Any subjective condition such as fatigue or nervousness tends to do likewise. If this is true, can all children be said to stutter? Certain investigators do make this statement. The author prefers to

consider primary stuttering according to his definition of a speech defect. If the repetitions, prolongations, or hesitations are so frequent or peculiar that they command attention and interfere with communication, they may be called symptoms of stuttering. If not, they are part of the wide rhythmic variation permitted to normal speech. To put it in another way, children vary in nervous stability, in cerebral dominance, in their ability to resist disturbing influences, in their ability to send properly timed impulses down to the paired speech musculatures, in their ability to carry out a pattern of movements in time, and in a great many other integrative capacities. Those children who possess these abilities and capacities to a high degree and who are not bombarded by a host of disturbing influences seldom show any repetitions, hesitations, or prolongations in their speech. On the other hand, those children who inherit or acquire an unstable nervous system, a narrow margin of cerebral dominance, and inferior coördinative and integrative abilities will probably have a great many repetitions and prolongations even under slight environmental pressures. Many oversolicitous parents bring to the speech correctionist children who have fewer symptoms than the parents themselves. Before a child is diagnosed as a primary stut-terer, the speech correctionist must know how often the primary symptoms occur and under what conditions.

"Outgrowing" stuttering, the term so frequently applied to the gradual disappearance of the handicap, is really a matter of maturation. The first symptoms appear when the child is in a state of developmental confusion. He is learning to speak while he is also giving his attention to the acquisition of walking and many other motor skills. His environment bombards him with hundreds of stimuli, and he responds to all of them, having learned experimentally no process of selection. So many simultaneous reactions tend to create a nervous instability, which is often evidenced

in an instability in the operation of the speech mechanism. As the process of maturation proceeds, the child learns his motor skills, and, when they become automatic, he does not need to concentrate upon them. He also learns to select stimuli from the barrage thrust upon him, and consequently much confusion disappears. He learns to erect barriers against environmental excitement and does not respond to all disturbances. Thus the child's entire mechanism becomes more stable, and, with increasing stability, the speech blocks often vanish. However, they disappear only if, during this period of instability, the child has not become aware of them as a definite handicap. If he can be prevented from reacting to his stuttering, he will develop none of the tricks for hiding blocks or for making speech attempts easier. Thus he will be spared the abnormal communication which these habitual tricks and techniques ultimately bring. Treatment of the young primary stutterer is primarily prevention.

This prevention is accomplished chiefly through the education and coöperation of the parents and teachers. It can truthfully be said that the way to treat a young stutterer in the primary stage is to let him alone, and treat his parents and teachers. Nothing must be done to call his disorder to his attention, or to point it out to him as an abnormality that he must eradicate. Such techniques only serve to develop awareness of the abnormality and subsequent sensitivity concerning it. But a great deal can be done in the home and school to keep him from developing the useless and handicapping secondary symptoms. Following are the most important remedial methods for helping a young primary stutterer.

First, and of the greatest importance, all speech conflicts must be removed. Whenever a child in the first phase of stuttering experiences a speech block, there is some attendant pressure which precipitates that interruption. Therefore,

his experiences and his environment must be analyzed to determine what these pressures are. One satisfactory way of making this analysis is to keep a list of all words on which blocks occur, the situations in which they are found, and the possible pressure which caused them. Parents often go just this far—they determine the pressure, and then do nothing about it. It is not enough to recognize the precipitating factors—definite steps must be taken to remove or minimize them. Some of the common speech conflicts which should be checked and removed are: interrupting the child; talking for the child whenever communicative difficulty is evident; suggesting other methods of talking which you think will make speech easier for him (such as talking slowly, taking a deep breath before words, thinking what he will say before he starts to talk, substituting another word for one on which trouble occurs, and so forth); ridiculing the child whenever blocks appear; requiring oral confession of guilt (whereby emotionality becomes attached to the speech act); too high speech standards in the home or school; penalizing or punishing the child when abnormality occurs (such as telling him to remain silent until he can say the word correctly); requiring the child to talk when he is fatigued or excited; attempting to make the child hurry when he is talking slowly; and forcing the child to “show off” by speaking pieces or reading to strangers when he is unwilling to do it. Each of these may seem of minor importance, but each is a potential force for increasing the number of primary blocks and for developing subsequent secondary reactions.

Second, the child must be kept in as good a physical condition as is possible. A stutterer needs more rest than the average child. We have mentioned that stuttering seems to come in waves of increased frequency and severity. Periods of good speech alternate with bad periods. When the stuttering is at the height of a frequency wave, fatigue

will greatly increase the actual number of blocks, and, when stuttering is at the bottom of that wave, fatigue will precipitate blocks which otherwise would not occur. The child must also have a well-balanced diet, and all sources of physical infection or irritation should be removed. He must have as much physical stability as it is possible for him to attain.

Third, the child must have a pleasant home situation. All possible family conflicts should be cleared. This will be very difficult for some parents to accomplish, but a child reacts to implied attitudes, even though those attitudes are not discussed openly before the child. Any implication of them reflects in his emotional adjustments, and anything so vital to the child's future welfare should be well worth any difficulty of accomplishment. In some homes, too, the tempo of living is so fast that it creates instability in the child. The members of the family act impetuously and under great tension, and the child will naturally acquire the same type of reactions. A stuttering child needs a home life devoid of such tension and full of calm activity, and this is another problem for his parents to solve as soon as they can. Use of a good routine is a very effective way of destroying nervous, useless activity in a home, and of supplying much-needed stability. Finally, the rest of the family should accept the child's stuttering unemotionally as his particular way of talking.

Fourth, the parents and teachers must learn not to react emotionally to the child's stuttering blocks. Because of the principle of empathic response previously discussed in this text, the reactions of others to the abnormality will help to determine the stutterer's own reactions. If you are surprised, embarrassed, or impatient, he will become aware that his communication is not normal, and will react likewise. If you tell him to hurry, to say words over and say them correctly, or if you say words for him because you don't

want to wait for him or because you don't want others to see his handicap, he will become confused and ashamed, and will begin to struggle and force in an attempt to speak normally. If you blush or seem embarrassed when he has difficulty in the presence of others, he will realize that there is something about his speech which makes others uncomfortable. One of the greatest needs in stuttering therapy is to train others in nonreaction to the speech block. Even though it be painful, the normal individual should discipline himself to look the stutterer directly in the eye while he is talking, to show no signs of impatience, and to make no attempt to help him speak. These attempts to help a stutterer talk only develop feelings of inadequacy and dependence in him. Understanding one's own emotional reactions, and a course of self-discipline in reacting intelligently, rather than emotionally, to one's personal problems, will greatly facilitate the development of nonreacting attitudes toward those who have more obvious differences. When the primary stutterer repeats and prolongs, the parents should wait quietly for the blocks to pass, and the stutterer should feel that he has all the time in the world to finish the sentence.

Fifth, the parents and teachers should seek to cancel all the child's unpleasant memories or experiences of stuttering. One of the best ways of doing this is to distract the child's attention to something else immediately after a block occurs, so that the block will not linger in his consciousness. Another way is to have the parents and teachers fake a stuttering block occasionally when talking to the child, so that he will not think such speech is peculiar only to him. Still another valuable technique is to manipulate the conversation so that the child can successfully say words with which he previously experienced difficulty, so the final memory will be one of normal utterance of those words. If forcing begins to appear in the speech, the parents can show the child

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that he made the word difficult by "pushing it out," and that they, too, would experience the same difficulty if they forced the words out as they uttered them. Great care should be taken to erase memories of speech difficulty, for if a stutterer retains impressions of unpleasantness, he will build up fears of such occurrences in the future.

Sixth, try to establish favorable speech conditions in the school and on the playground. The teacher can help the classroom situation to a great degree if she ignores the stuttering and refuses to react to it, for she determines the attitude of many of the children. She should tactfully explain to the other children in the room that the stutterer just has a different way of talking, that it is only temporary, and that he will get over it sooner if they all give him plenty of time to talk and pay no attention to the different kind of speech. She should encourage the child to recite, and should never call attention to any evidence of speech abnormality in the recitation. The classroom situation can be made much more favorable if all other problems are settled in an unemotional way. If the teacher is easily provoked to anger, easily embarrassed, and shows her own emotionality often, it will be much more difficult to establish a nonemotional attitude in the children. If the stutterer is teased on the playground, the teacher should discuss that problem with the other children, attempting to solve it not by threats or punishment, but by the explanation that all of the others have differences, too, and that they will actually harm the stutterer if they taunt him because of his different speech. The attitude in the school is of vital importance, because children can be ruthless in their attitude toward a handicap. But a wise teacher can create an understanding attitude of acceptance and unemotionality, even though she may be unable to recognize the actual techniques with which it is accomplished.

Seventh, the child should be given as many ideal speech

situations as possible. He can strengthen his normal speech by exercising it. Let him tell stories, recite verses, and read aloud in situations in which there is no pressure or tension. Let him have the responsibility, and do not interrupt or correct him. Encourage him to talk in family situations in which there is no tension—at the dinner table or in informal recitals of his day's activity. Have the other children in the family, or the parents, play speech games with him which emphasize slow, distinct speaking and rhythmic speech. Little dramatizations of stories can be arranged in the home, in which the stutterer is given parts which call for slow, smooth speech. Above all, the child should not be placed on exhibition. He should be encouraged to volunteer in informal situations, and should be accepted as part of the group when there is no attendant speech tension. It is usually unwise to place a young primary stutterer in any speech-correction class, as it only tends to point out his abnormality. Treatment of the young primary stutterer is always indirect. On those days when few blocks occur, he should be stimulated to speak as much as possible. On the days when he has a great deal of trouble, he should be so handled that he talks very little.

Eighth, insist upon unilaterality in most of the child's activities. Let him determine his own hand preference and eliminate all effort to change this preference. When the child is able to write easily, teach him to talk and write at the same time, using the technique described in the next sections of this chapter. Give him many new one-handed skills and do not permit him to engage in such activities as typing or piano-playing.

Ninth, train the child to perform temporal patterns with the paired musculatures. The parent and teacher can play little games in which the child beats out simple rhythms. Thus the parent can tap out a simple iambic rhythm, or play it on one piano key, while the child claps his hands,

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or kicks with both feet, or protrudes his tongue, or blows through a straw into water. The old nursery game of "patty-cake" is an excellent device. Various rhythms may be used. Both limbs and both of each pair of speech structures must act simultaneously in similar or mirrored ways.

Tenth, increase the child's personality assets in every way and decrease his liabilities. The solution of his emotional conflicts and behavior problems will often reflect itself in better speech. Many a primary stutterer has been "cured" by giving him mastery of new skills and greater social adequacy.

Eleventh, if it is impossible to keep the child from being dubbed a stutterer and penalized because of his speech difference, it is wise to tell him that he does indeed have some hesitations and repetitions in his speech, but that these are not at all serious, that he will probably outgrow them, and that almost every person has them. The parent and teacher may point out those that occur in their own speech or they may occasionally fake a few of them so that the child will attach no importance to them. If he is being teased about the disorder, he should be taught to admit it casually by saying, "Sure, I stutter a little. Everybody does. What of it?" Most teasing stops when confronted by such an attitude.

It is also possible to stop much of the teasing by calling in the ringleader of the group doing the teasing and informing him of the consequences of his actions. For some odd reason, teasing usually stops when it is realized that it leaves a permanent effect. If the ringleader is also given the responsibility for preventing any playground teasing, he will usually coöperate enthusiastically.

The Treatment of the Stutterer in the Secondary Stage

This stage of the disorder, it will be remembered, is reached when the individual has developed fears of words

and situations, habitual or conscious reactions to the fear of or occurrence of block, and mal-attitudes toward his stuttering. It is marked by the appearance of the secondary symptoms of avoidance, postponement, anti-expectancy, starters, release, and disguise. Social maladjustment usually develops. The disorder, to use some of the older terminology, has become "chronic," or self-perpetuating. The more the individual stutters, the greater grow his fears, and the more frequent and severe his blocks become. A vicious circle of reaction has been established.

The various methods for treating secondary stuttering. In an earlier section of this chapter we have described several of the many conflicting theories concerning the nature of stuttering. From a consideration of these theories, it might be concluded that there would be many contrasting kinds of treatment. Yet, when the actual therapies are scrutinized, one is impressed by the large number of similar methods used in common by the majority of speech correctionists. Terminologies, emphasis, and theoretical justifications differ; the activity remains the same. This rather curious agreement is even more evident in terms of the subgoals set up for the stutterer. No matter to what theoretical schools they belong, all clinicians attempt to reduce the stutterer's fears, forcings, and inadequate social behavior. All speech correctionists carry out some etiological therapy, depending on the theory of causation to which they subscribe or on the causal factors present in any given case, and this part of the therapy differs widely. However, few clinicians actually working with stutterers confine their efforts to eliminating the causes. All of them work with symptoms—with the situation and word fears and with the repetitions, prolongations, facial contortions, and other typical stuttering reactions. There seem to be two major schools of thought in terms of actual therapy.

One school of speech correctionists, numbering among its

adherents many of the older workers in the field, attempts to teach the stutterer methods for *avoiding* or preventing *fear* and *occurrence* of stuttering blocks. It aims to eliminate the emotional factors which precipitate the symptoms. The stutterer is urged to believe in the theory advanced by the clinician, and nothing is left undone to convince him that he can be cured. Strong clinical suggestion and even hypnosis are used to strengthen his confidence in the remedial techniques. Routine breathing and vocalization exercises and rituals are employed. Through the use of distractions of all kinds, the fear of stuttering is kept from consciousness. Gestures, head movements, and other forms of muscular reinforcement are used as starters. Strange methods of vocalization, preceding all consonants by a vowel, singsong speech, the "octave-twist," stereotyped rhythms of stress or phrasing, slurring of the consonants, and many other similar devices are used to keep the fear from becoming potent enough to precipitate stuttering. Every effort is made to get the stutterer to forget his fears and symptoms. He is urged to consider himself a normal speaker. By the use of speech situations and types of communication arranged according to graduated levels of difficulty, his confidence is nursed along until it becomes sufficient to enable the stutterer to speak without fear or stuttering at each successive level. Group techniques help to decrease the fear and increase the suggestion.

In the majority of cases, this type of treatment produces immediate release from fear and stuttering. The stutterer believes that, at last, a miracle has happened. Hesitantly he applies the formula and lo! it seems to work. His confidence grows by leaps and bounds, and, as it does, his fears decrease. He writes his clinician a glowing letter of praise and thankfulness and departs for his home. Occasionally, his new speech fluency continues for the rest of his life. Whenever fears arise, and they are inevitable, he applies

the formulas given to him by the speech correctionist. If the environmental pressures are not too great and novelty, suggestion, and faith are still effective, the formulas successfully dispel the fear. He realizes that he can still speak without stuttering.

Unfortunately, like most of the devices the stutterers themselves have invented, the formula devices soon become habitual and relatively unconscious. When this happens, they no longer are able to take the place of fear in the stutterer's mind, and relapse usually occurs. Giving the stutterer a period of free speech does not solve his problem if, and when, fear returns. Nevertheless, in the safe haven of the speech clinic, where belief and novelty are important factors and both group and clinical suggestion are everywhere, the stutterer finds great relief. Under such conditions, few stutterers experience much trouble, but unfortunately such conditions do not exist in ordinary life. When the stutterer returns to his home or former environment, or meets situations which remind him of past failures, there is no one around to tell him that his fears and blocks are mere bugaboos which will disappear if he follows the formula. Life is not made up of easy speech situations or optimal conditions for communication. He finds that he cannot remain relaxed when he applies for a position. He finds it impossible to remain permanently unemotional. The self-confidence, so carefully and painstakingly nurtured by the speech correctionist, collapses like a house of cards. The formula suddenly seems to have lost its charm. Faith crumbles. The stuttering returns in all of its viciousness, often with greater frequency and severity than before. The stutterer attempts to relax, but fear and panic prevent relaxation. He starts his arm swing, or "octave twist," or what not, and finds that suddenly it does not keep out the blocks. After repeated failure, he finally gives up and resumes his hunt for a new miracle worker to cast out his

"stuttering devil." Meanwhile, the speech correctionist has new stutterers to whom the formula may be taught.

The second major school of speech correctionists is relatively young. While most of the devices used by the other school have been employed for centuries, those of the new school have evolved in the last ten or twenty years. Although its adherents quarrel among themselves about the etiology of stuttering and fail to agree with regard to the nature of the primary symptoms, they all doubt that the secondary stutterer can ever entirely free himself from fears of certain situations and certain words. They feel that an individual who has developed habits of avoidance, postponement, timing, and disguise as reactions to the fear of stuttering will never break those habits by merely experiencing a period of free speech. They doubt that faith in any formula will eliminate the fear in the majority of stutterers. They feel that the effects of suggestion and distraction are temporary and that self-confidence is affected by too many other factors to render it a permanent foundation for fear-free speech. In other words, this school believes that it is impossible to keep out all fears or occurrences of stuttering blocks for any great length of time, and that no abnormal form of rhythm or utterance will provide permanent relief.

The adherents of this school point out that it is possible to modify the form of the stutterer's speech abnormality without preventing its occurrence. They call attention to the wide variation in secondary symptoms found in different stutterers as a sign of the fact that it is possible to stutter in many different ways. They claim that it is possible to stutter with a minimum of abnormality and interruption and that, when this is done, the fear of stuttering and most of the blocks disappear. They insist that most of the abnormality and interruption is produced by the stutterer's conscious or habitual devices to avoid, minimize, disguise, or

release himself from the blocks he feels. They believe that these devices can be disrupted and eradicated. They attempt to use the fear of stuttering as a signal to warn the stutterer to modify and control the form of any symptoms which might ensue, and as a signal to adopt new preparatory sets which can prevent the occurrence of the old secondary symptoms. They insist that the stutterer acquire an objective attitude toward his speech difference—to admit its existence and to refuse to pose as a normal speaker, but to control his fears and blocks so that only a minimum of interruption and abnormality will occur. They feel that such an attitude so diminishes the social penalties placed upon the disorder that the fear of stuttering is greatly reduced. They declare that these principles not only will decrease the duration and severity of the individual blocks but that those blocks will diminish in number. Fluency and release from fear are thus considered to be by-products of *controlled stuttering* rather than the results of *avoided stuttering*. The adherents of this school argue that their methods provide security for the stutterer when fears or blocks do reoccur. We may summarize the point of view by saying that this school teaches the stutterer not to keep out or avoid his blocks and fears, but to control them so that they can occur with a minimum of interference to communication.

Outline of treatment for modifying the form of stuttering. It is probably obvious that the author belongs to the latter school. The method for treating the secondary stutterer, which will be described in this text, points its therapy at the following goals: (1) eliminate the neuromuscular blocks through establishing unilaterality of motor lead control and simultaneous talking-and-writing techniques; (2) decrease the fears and mal-attitudes by teaching the stutterer to admit and accept his stuttering as a temporary problem which must be faced and conquered; (3) modify

and lessen the severity of the stuttering blocks by eliminating the secondary symptoms of stuttering; (4) teach the stutterer not to avoid fears or blocks, but to use them in learning how to stutter in an easy, effortless fashion, with a minimum of interruption or abnormality. With this therapy it usually takes longer to achieve speech free from blockings, but relapse is much less frequent, and the stutterer always has a method for controlling his fears and stuttering reactions if they do return.

The treatment of the secondary stutterer is largely carried out through individual conferences with the speech correctionist, through the use of carefully prepared speech assignments, and through coöperative projects involving groups of stutterers. Like all speech defectives, each stutterer presents an individual problem and must be treated as such. Certain individuals require much more work on one phase of the treatment than do others. Personality readjustment such as that sketched in Chapter V is frequently necessary. Adequate motivation is important, for this treatment makes such a strong demand on the individual that perfunctory coöperation dooms it to immediate defeat. It is usually wise to let the student see the exact sequence of the treatment so that he appreciates the importance of attaining the subgoals in order to attain the final goal of free speech.

Therapy is carried out through a series of successive periods or levels, each of which involves the use of new subgoals and new techniques. The techniques, however, overlap, and those of prior levels continue throughout all later ones. Thus the assignments and projects of the second stage include not only the new techniques specific to that level but also all those used in the first stage. New subgoals and new techniques are added to, not substituted for, former ones. During the work on each of these levels, the speech correctionist should use every effort to prevent speech fluency due to the influence of suggestion or attitudes of

self-confidence. These factors are too unstable to be relied upon for permanent relief. Instead, all clinical emphasis should be placed upon the attainment of good mental hygiene, the ability to disrupt the old habitual reactions of avoidance or release, and the ability to control the form of speech abnormality. Speech free from all stuttering is a by-product and an end-product, not the immediate goal. Stress is not placed on the absence of stuttering blocks or fears, but upon those blocks and fears which are controlled. The student is encouraged to stutter, but to stutter without the old abnormalities of emotion and behavior.

The first period of treatment. The activities which characterize the first period of treatment for the secondary stutterer may be enumerated as follows: (1) training in unilaterality; (2) training in the performance of temporal patterns with the paired musculatures; (3) eliminating the stutterer's tendency to avoid feared words and difficult speech situations; (4) initiating a program of general self-improvement, which includes the eradication of those other differences and inadequate reactions which provoke social penalty or interfere with efficient therapy; (5) changing the mal-attitudes of shame, embarrassment, and unpleasantness which are associated with the experience of stuttering; (6) training in the erection of psychological barriers against disturbing influences; (7) analyzing and understanding the stutterer's fears and symptoms through self-study during the stuttering act; (8) systematically studying stuttering as a speech disorder, including all other points of view, and culminating in an understanding of the entire sequence of treatment and an evaluation of the modifications of the general therapy necessitated by the characteristics of the stutterer's own individual problem.

Individual therapy. It is usually necessary to clarify for the stutterer the general policy governing his coöperation. The author's policy is to terminate all treatment for

a period of two weeks as a penalty for failing to make a daily achievement in each of these eight phases of the therapy. This system is understood by each stutterer before he is accepted as a case, and few excuses are considered adequate. The clinician devises all the assignments for five days of each week, and the stutterer constructs his own assignments for the sixth day. One day of the week is set aside as a day of "relapse," during which the stutterer need not apply any of the principles or methods that he has learned. It might be thought that the latter policy would undo all the progress of the week, but clinical experience is all to the contrary. The stutterer needs the rest from the regime; he needs an opportunity to express the old habitual urges of avoidance that he has repressed during the week. Interestingly enough, he often finds it difficult and even unpleasant to refrain from using his new adjustments and techniques, and each new week is greeted with eagerness.

In making the assignments, the clinician always tries to fit them to the peculiar needs of the stutterer. He constructs them so that they are simple, easily understood, and possible of being performed without too much inconvenience. They must always be pertinent to the purpose they are alleged to serve. They must permit some objective check or report. The stutterer must be able to state the purpose behind the assignment. While the clinician always attempts to keep the difficulty of the assignment within the limit of the stutterer's ability to carry it out, certain fluctuations in mood which cannot always be sensed by the clinician make it necessary to provide for refusal. Thus, the stutterer may protest any assignment, but he must state his reasons. The clinician must always evaluate these protests very carefully, and, if the reasons seem legitimate, the assignment is revised. If the stutterer's objections are not psychologically valid, he is told that the assignment must be

fulfilled under penalty of the two weeks' dismissal. During the first weeks of therapy, a close check must be made to determine whether or not the assignment has actually been performed, for most secondary stutterers have an infinite capacity for wish fulfillment. The speech correctionist, his assistants, or some other speech defective should occasionally supervise the stutterer on some of the assignments to provide assistance, analysis of reactions, and morale.

Group therapy. When it is necessary to work with groups of stutterers, certain periods may be set aside for each of the eight phases of the work, although the assignments should still be fitted to the individual stutterer. In certain clinics, report sessions are held at the beginning of each day. The stutterers all meet together and report in turn their achievements of the previous day. New assignments are then given and explained by the speech correctionist. Individual conferences with each stutterer are held throughout the day to take up any special problems needing solution, explanation, or emphasis. During these conferences, the clinician also requires the stutterer to carry out short assignments representative of each of the eight phases of the work. Modifications of the assignments can be made. Usually, at some other period during the day, a group meeting is held during which the speech correctionist can lecture on various phases of stuttering and encourage general discussion. When such group meetings cannot be held during the day owing to the demands of the stutterer's work or class schedules, a stutterer's club, meeting in the evening, can serve the same function.

In some clinics, the students are required to spend all of their time on speech therapy, but the author does not feel this necessary or wise. Speech therapy should be made a part of normal life as far as possible. Speech assignments should carry the student into all types of situations, and should not be confined to the school or clinic

but performed throughout the city. The stutterer should work on his speech especially in those situations which were formerly most difficult. He should try to duplicate those situations in which his stuttering was most severely penalized and apply his therapy therein. The stutterer must learn to control his fears and blocks, not in the quiet haven of a tolerant speech clinic, but in the situations of normal life.

Training in unilaterality. The author's theoretical bias and clinical experience have led him to insist upon a strict unilaterality in the stutterer's motor skills, whether or not any shift of handedness seems to have been a potent dominant factor in causing the disorder. He requires his stutterers to give up the two-handed skills involved in the playing of musical instruments or in typewriting, although some musical instruments necessitate only unilateral skills and it is possible to attain sufficient one-handed speed in typewriting for all ordinary purposes. If the stutterer has a history of having been shifted in his handedness and demonstrates an essential ambidexterity or dominance of the usually nonpreferred hand despite years of use and training of the other hand, he should be required to effect a complete change of sidedness. All activities should be modified so as to produce a complete unilaterality of motor control. The stutterer must learn to eat, write, play tennis, dress himself, and do all the other things with the designated hand. The larger activities, such as throwing, should be emphasized early and the finer skills later. New activities closely related to speech, such as shorthand or telegraphy, may be learned on the new unilateral basis. When no shift of handedness is required, the student should do his utmost to maintain a similar unilaterality in these activities and to acquire increased skill in them, using the hand he naturally prefers.

One of the most effective ways of ensuring unilateral

motor lead control of speech is that of simultaneous talking and writing. Using the proper hand, the student should endeavor to "tie up" talking and writing in the following manner. Initiating the script attempt first, he should make the speech attempt simultaneously with the dominant stroke of the first letter of the word. These dominant strokes vary with different individuals, but they may be easily ascertained through analysis. Speech attempt should be sudden and exactly timed with this stroke, without previous rehearsal in whispered or implicit form. No mumbling should be permitted, and articulation should be as clear as possible. At first the whole word should be written out, and the teacher should closely supervise the speech and script attempts to ensure proper timing. Later on, only the first letter of the word need be written, and the student may perform the activity by himself, although frequent rechecks by the teacher are usually necessary. Reading, memorized material, and some occasional conversation may be used for this simultaneous talking and writing.

In addition to the above type of simultaneous talking and writing, using only one hand, another type using both hands is also employed. This form is called "vertical board writing," and the stutterer uses a board similar to that used for testing handedness, which is described in Chapter VIII. The proper hand is watched by the stutterer, and the other hand is allowed to follow automatically. Unilateral control of a bilateral performance is thereby achieved. The unwatched hand usually writes mirror-script as the watched hand is directed in normal writing. Movement of both hands should be as unified as possible, but always under the dominance of the proper hand. The same timing and clear articulation demanded by unilateral talking-and-writing is also required for vertical board writing.

One of the clearest accounts of the necessity for unilaterality is found in Koepp-Baker's manual, and it may be

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given to the adult stutterer to read. Typical assignments are also given therein. In most clinical practice, the stutterer is required to turn in a certain number of pages of simultaneous talking-and-writing each day, to record on a chart his progress in mastering some new unimanual skill, to report what bimanual activities he performed with one hand, and to show the clinician the check list of times he used the wrong hand during a certain designated period or nucleus situation.

When examination of the case history and special test convinces the speech correctionist that a shift of handedness has occurred, it is usually necessary to insist upon a complete return to the former type of handedness. It must be realized that such a shift back to a former hand is not to be effected without a great deal of difficulty. The student must be willing to coöperate. All of his bimanual activities should be changed to unimanual ones, at least during the period of treatment. He must learn to button his clothes, to eat, and to write with the other hand. Sometimes, the use of a cotton wrapping about the hand will prevent its unconscious activity. Most important of all, he must learn to write with the other hand, and, while doing so, should attempt to keep the original writing hand from making little simultaneous writing movements. The slant should not reverse itself. Care is usually taken to provide a good clear script, since the coördinations are thereby improved.

Training in performing rhythmic patterns with the paired musculatures. Since stutterers are notoriously weak in their ability to perform temporal patterns using paired musculatures, training in such activities is provided as part of the daily routine, and the stutterer is required to report his achievement in this phase of the work. All types of what West calls "diadochocinesis" are used. Lifting and lowering the eyebrows, biting, tongue protrusion, panting, and

the use of the upper or lower limbs in simultaneous mirror-movements are among the activities employed in this training. Among the latter limb exercises are clapping, squeezing, slapping, lifting, marking, pulling, pushing, kicking and stamping, and depressing signal keys or levers.

Phonograph records are used to provide a stimulus pattern. The stimuli are tones or buzzer-noises arranged according to some arbitrary pattern. The author produces his own stimulus patterns by means of a simple rhythmic variator constructed on the principles of that described in Hunsley's research.³⁴ Three records, graduated according to complexity of the stimulus pattern, are used. Each record consists of a temporal stimulus pattern, repeated five times at each of ten different speeds. The rhythm of the first or easiest record may be shown graphically by the spacing of the following period marks: (. ..), and that of the most difficult record by: (... ..). The stutterer is required to listen to the first two repetitions of the stimulus pattern. He then carries out his activity in unison with the last three occurrences of the stimulus pattern. At certain speeds, little difficulty is experienced, but, as the pattern is speeded up, clonic and tonic blockings are noticed. Training, however, can greatly improve the stutterer's ability in performing these patterns, and the author believes that the activity has a distinct clinical value. When more complex rhythms are necessary, those of the Seashore tests are employed.

In order to provide an objective check on the subject's ability to approximate the stimulus pattern, the author employs a polygraph or kymograph setup, similar to that described by Hunsley. The stutterer can depress keys, levers, or bulbs with the hands or feet, or use the biting

³⁴ Hunsley, Y., "Dysintegration in the Speech Musculature of the Stutterer During the Production of a Non-vocal Temporal Pattern," *Psychological Monographs*, 1937, Vol. 49, pages 32-49.

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tubes and other apparatus described in the immediately preceding references. These are connected to the tambour carrying the writing lever, and the subject's performance is thus recorded. The stimulus pattern is usually recorded on the same polygraph when the phonograph record is made, in this way providing the necessary model. If the speech correctionist has a good ear for rhythm, he can dispense with the apparatus. The author prefers the apparatus because it allows the stutterer to work by himself.

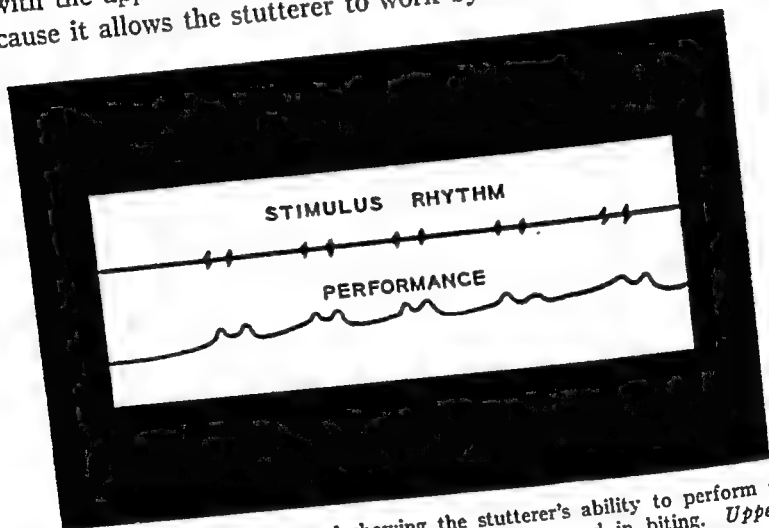


Fig. 22. Polygraph record showing the stutterer's ability to perform a definite rhythmic pattern with the paired muscles used in biting. *Upper line:* stimulus pattern (tones on a phonograph record); *lower line:* response pattern made by the stutterer in biting a rubber tube leading to tambour. (Retouched.)

The objection might be raised that these bimanual or bilateral performances are contrary to the training in unilaterality sketched in the last section. However, in following the temporal pattern, the paired structures act as units rather than independently, and hence some unilateral dominance in timing must be effective in order to achieve the integration. In order to facilitate this integration, all move-

ments of the jaws, tongue, and other speech structures are timed by the tapping of one finger or by a movement of the preferred hand. It is interesting that stutterers perform better when using this unilateral timing in conjunction with the biting, tongue protrusion, and other similar activities than they do when it is omitted.

Eliminating avoidance of feared words and speech situations. The secondary stage of stuttering is always characterized by word and situation fears, which range in intensity from a slight uncertainty or doubtful premonition to a state of panic so extreme as to leave the stutterer glassy-eyed and incapable of any intelligent effort. The pulse rate has been known to increase from 75 to 120. All the other physiological and psychological characteristics of extreme fear have been noted. Since fear always entails the expectation or anticipation of unpleasantness, the stutterer always feels a strong urge to avoid that unpleasantness. This avoidance manifests itself in many ways, but especially in the substitution of another word for the feared word and in the refusal to enter situations in which stuttering is likely to be experienced. Circumlocution, cessation of speech attempt, attempts to get the listener to say the word, and speech in short phrases or monosyllables are some of the other ways in which the stutterer avoids his feared words. Also, he uses hundreds of tricks and approaches to alter the feared speech situations so that they are no longer the ones which frightened him. His mind is filled with rehearsal and revision of what he plans to say. Frequently he shifts the word order so as to minimize the expected difficulty. On his way to the feared situation, he visualizes his future agony over and over again. Many stutterers have few overt blocks and yet suffer extremely from the necessity of maintaining the constant vigilance that avoidance demands. The tragedy of avoidance is that in the long run it defeats its own purpose and increases the fear. Avoidance begets

fear and makes it cumulative. The author knows from his own past experience as a severe stutterer and from his dealings with many other stutterers that it is better to have a five-minute blocking than to avoid a word successfully. We never conquer fear by running away; we only increase it.

In eliminating the avoidance reactions, the speech correctionist must teach the stutterer to understand why he avoids feared words and situations, to recognize when and how he avoids them, and to realize the future consequences of this avoidance. In achieving these aims, it is wise to go with the stutterer into some situation which might produce an avoidance. After it has occurred, the clinician should analyze the situation to determine what benefit actually resulted from the avoidance. Often the stutterer will have blocks on other words. Indeed, he often has them on the circumlocution or the substitution itself. The listener may be interviewed to discover what his actual reaction really was. The stutterer may be asked to keep track of fifty situations in which he avoided the block and to note in how many of them no other stuttering occurred. The speech correctionist and all of the stutterer's other associates who know of his therapy should penalize all avoidances and accept the stuttering. The stutterer should develop a conscience which itself will penalize the tendency to avoid. Association with other stutterers will often provide, through examples, the rejection of avoidance taught by the clinician. The strongest clinical pressure should be placed upon non-avoidance as the cardinal principle of the therapy. Nothing is so debilitating as refusal to make an attempt or reacting to a challenge by retreat. No stutterer can give up avoidance immediately, but if a month's therapy still finds him frequently substituting and avoiding, he is banned from the clinic for a time. Since many of these substitutions are relatively unconscious as well as habitual, the clinician must use some judgment in his accusations and penalties.

In general, however, a general intolerance toward this type of weakness should characterize the clinic atmosphere.

In the daily conferences with the clinician, the stutterer should report on the previous day's progress in eliminating avoidances and should receive the next day's assignments concerning this phase of the therapy. After a few weeks of preliminary work, the stutterer is required to write out a detailed account of every avoidance that occurs, describing the feared word or situation and the reason for the failure. The clinician should always assign some task to cancel the failure. This usually consists of sending the stutterer into a similar situation or one of equivalent difficulty and requiring him to use the same feared word or to avoid it purposely, confessing to the audience the trick he had employed. All words which the stutterer has avoided are posted on the bulletin board and the other stutterers and clinicians try to direct his conversation and speech activities so as to include them. These words may be worked up into a reading passage of rather absurd meaning and repeated at intervals throughout the day. An effective device is that which requires the stutterer to avoid certain nonfeared words in a given speech situation. The subsequent circumlocution and hesitant phrasing become very detestable, and occasionally these formerly nonfeared words will become feared, thus showing the stutterer the consequences of avoidance.

Some other typical assignments in eliminating word avoidance are as follows:

1. Record and post on your progress chart in the clinic the exact time at which your first word avoidance occurred. Do this daily for a week.
2. Say, "D-D-D-Doggone it, I substituted just then," and make a check mark on a card whenever you avoid a word during mealtime.
3. Make three phone calls and hang up the receiver the mo-

ment you find yourself substituting or using circumlocution to avoid a word.

4. Fake a long effortless repetition on the next word after you have caught yourself substituting. Record the situation in which this occurred.

5. Ask some other stutterer to draw up a list of ten speech situations. Perform three consecutive situations without word substitutions.

In order to get rid of the tendency to avoid difficult situations, it is useful, during the first few weeks of treatment, to give the stutterer what, in clinic parlance, is called a "bath of stuttering." A list of one hundred or more speech situations is handed to the stutterer, and he is required to perform them within a certain number of days. These situations range from the stopping of a stranger to request a direction or a match to the procuring of information concerning the prices, advantages, and disadvantages of portable boats. Such a list may be found in the handbook of Koepp-Baker. The stutterer is asked to study any tendencies to avoid or alter the situations and to report them as well as his actual experiences. It is also useful to assign a certain quota of stuttering blocks per day. If this quota is set at five hundred, and the student is instructed to collect them in speech with strangers, the average stutterer will have to work hard to get that many. To the young clinician, these assignments may seem of doubtful value, but they effect profound alterations in the stutterer's characteristic dread and urge to avoid the words and situations which frighten him. Such experiences teach him that direct attack on his bugaboos tends to dissipate the fears. The threat of stuttering no longer throws him into a state of utter panic. A stuttering fear or a stuttering block becomes something to work with; it becomes objectified. Thus the stutterer prepares himself for that control of the form of his stuttering which is the immediate goal

of this type of treatment. Avoidance can never give a stutterer the permanent speech security that the ability to control his stuttering blocks will guarantee.

The program of general self-improvement. Since the frequency and severity of the secondary stutterer's blocks are usually proportional to his feelings of insecurity and inadequacy, it is vitally necessary to carry out a program of general improvement. This program includes the elimination of those differences other than his speech defect which society penalizes, and also the destruction of those characteristic behavior patterns which are not adequate to a normal life. All speech correctionists, no matter to what school they belong, recognize the importance of this general self-improvement and provide remedial measures to accomplish it. The stutterer should be given opportunity to develop as many new social assets as possible. Daily assignments in self-improvement are always given as a part of the clinical program arranged. The general principles of this personal reëducation have been sketched at some length in a previous chapter, and the actual techniques vary so much with the stutterer's individual problem that it is impossible to give more than a few examples here.

C. Y., a boy of fourteen, constantly subjected to bullying by a playmate, was given three months of boxing lessons and coaching in baseball technique. He made the high-school team and whipped the associate who had bullied him. After these achievements, he showed a great improvement, not only in the lessening of his fears, but also in his general approach to stuttering therapy.

J. S., a woman of thirty, with no previous success in securing male friends and with few female associates, was referred to a counsellor who instituted beauty treatments, taught her to dance, compelled her to enter new church groups and social organizations, and guided her awkward mastery of social skills. Day-dreaming and extensive reading were eliminated as reactions to social penalty. She became overaggressive, but her speech defect rapidly cleared as the program of general self-improvement took effect.

B. W., a cleft-palate and stuttering boy, seemed to make no progress whatever until he was given a chum who was also working on a speech defect and until intensive tutoring allowed him to satisfy the demands of his parents for high educational achievement.

Eradicating the mal-attitudes of shame and embarrassment. One of the most important phases of the treatment of the secondary stutterer is that which attempts to change the shame and embarrassment which are associated with the act of stuttering. We have previously sketched the manner in which these attitudes develop from the penalties and the attitudes of the stutterer's associates. The secondary stutterers usually seen by the speech correctionist possess these mal-attitudes to a high degree, and they probably can never be eradicated in their entirety. It is usually wise to ask the stutterer to recall the most unpleasant experiences and to recount them to a group of fellow stutterers. When these formerly traumatic situations are reëxperienced on an adult and objective level, much of the attendant emotionality tends to disappear. The clinician must be careful to prevent overdramatization.

The stutterer must be taught to recognize the part played by these attitudes in perpetuating and intensifying his handicap. He must come to understand that these attitudes are ever-present obstacles in the path of his future progress. He must see that they foster much of the fear and panicky unintelligent struggle which increase the number and duration of his blocks. As soon as the stutterer realizes that shame and embarrassment are not inevitable concomitants of his symptoms, half the battle is won. The attitudes themselves are unpleasant enough to help the stutterer in his attempts to reject them. It is vitally important that another attitude be substituted in their place. Otherwise, little progress will be made.

The attitude taught to the stutterer as a substitute for

the old reactions to his blocks is that of unemotional admission of his speech difference as a problem to be solved. For the time being, he is a stutterer in his own eyes and in the eyes of his associates. It is odd that a shallow pretense of normal speech is a common trait of even very severe stutterers. They commonly go to extreme lengths to hide their disability; they struggle to disguise it even after it has been clearly demonstrated. This pose must be rejected. The stutterer must freely admit his speech difference for what it is. In the meantime, his task is to solve a difficult problem, to learn to master his stuttering, to learn to speak without interruptions and abnormality sufficient to provoke social penalties. If he is ever able to do so, he needs to free himself from those old attitudes, poses, and reactions which will interfere with his attempts to control his fears and blocks. In summary, we may say that the stutterer must (1) learn to adopt an objective attitude toward his disorder, and (2) gradually diminish the shameful and embarrassed reactions which accompany it. Each day during the first period of therapy for the secondary stutterer, assignments designed to fulfill these aims should be given to him.

The objective attitude is taught by precept and example, by verbalization and exhibition, by pseudo-stuttering, and by mirror work. The speech correctionist should give frequent talks to his stutterers on the function of and necessity for the objective attitude. The stutterer can be required to write a summary of these talks. Examples of the use of the objective attitude by other handicapped individuals seem to help a great deal. The basic reasonableness of the new attitude should always be emphasized, and the speech correctionist must adopt a similar attitude toward his own differences or insecurities. Other stutterers who have become fairly well adjusted to their speech differences should be used as models and should accompany the new stutterer in

his first outside speech assignments. Attitudes are best learned empathically. Often the speech correctionist can accompany the stutterer into some feared situation and, by pretending to stutter viciously, accompany this pseudo-stuttering with calm objective attitudes.

Many stutterers find it extremely difficult to talk about their disorder, and yet this very verbalization is one of the most effective agents in acquiring an unemotional attitude toward it. Normal speakers find stuttering a strange and interesting subject and are always willing to discuss it, after the threat of mutual embarrassment has been removed. The stutterer should seize every opportunity to educate the general public concerning the nature and causes of stuttering. Parents and old acquaintances especially should be used in providing this discussion. The stutterer should be asked to comment good humoredly on an occasional stuttering block. A casual smiling reference to a word that was uttered with difficulty often paves the way for a very interesting discussion, even with total strangers. The stutterer should be required to admit his stuttering as a daily routine. Thus, whenever the author's stutterers enter the door of the clinic, they are required to say to themselves, "For the time being, Mister——, you're a stutterer. No use posing as something else. Better get to work on your problem if you want to get rid of the handicap." The stutterer should be given assignments which require him to run errands or to enter certain business places in quest of information. He should exhibit the objective attitude in a certain number of these tasks each day. Failures may occur, but success is assured if the stutterer is persistent. At first, the stutterer may find the new attitude unnatural and transparently false. Nevertheless, if it is exhibited consistently, it will soon become a true reaction.

Another excellent device for teaching the stutterer to use the objective attitude and to get rid of his shame and em-

barrassment is that of pseudo-stuttering. When employing this pseudo-stuttering (also known as "voluntary stuttering" or "faking spasms") for improving his mental hygiene, the stutterer voluntarily imitates some obvious type of stuttering symptoms in his speech attempt on a nonfeared word. Usually a long repetition or prolongation is used. All forcing and facial contortion should be kept out, and the pretended blocks should be easy, obvious, and direct. As he performs this pseudo-stuttering, the stutterer must look his auditor in the eye, and, as soon as the pretended block is completed, he should continue without hurrying or showing any other sign of shame or embarrassment. He should practice the new attitude with the pretended symptoms. Occasionally, he may comment casually on the apparent difficulty experienced in producing the word in order to let his listener know that he feels no embarrassment. Stutterers often protest such assignments at first, but they soon come to realize how effectively the pseudo-stuttering eliminates shame and embarrassment, decreases audience penalty, and produces a sense of mastery and control of their fears and postspasm reactions. The objective attitude can often be learned through pseudo-stuttering and then associated with the true involuntary symptoms themselves. Pseudo-stuttering often dissipates the fear of true stuttering to an amazing degree. Daily assignments in "faking spasms" are thus an important part of the secondary stutterer's therapy. Some typical examples follow:

1. Prewrite the first sentence of three phone calls. Underline one nonfeared word in each. Fake an easy prolongation on the underlined word for five seconds before continuing. Rate yourself on a five-step scale of attitude toward stuttering.
2. Fake three repetitions on the first sound of the first nonfeared word in asking five strangers the way to the speech clinic. In how many of these situations did you look your listener in the eye?

self as you observe your reactions in the mirror. Exaggerate the self-pity.

4. Explain to yourself in the mirror the necessity for acquiring an objective attitude. Then repeat your arguments to another stutterer, who should attempt to take the other side. Make a mark on a sheet of paper every time you have a block.

Teaching the objective attitude to a secondary stutterer will do much to eliminate the old shameful and embarrassed reactions by a mere process of substitution. More rapid progress will be made, however, if these older reactions are attacked directly. This may be done by analysis, by penalty, and by the removal of the environmental intolerances which cause them. The stutterer should keep a diary of all those situations in which his stuttering produces marked shame or embarrassment. He should present this diary to the speech correctionist during his daily conference so that the psychological analysis can be effected. Usually, the stutterer is reacting not in terms of the actual situation but in terms of some past unpleasantness. Alternative reactions are suggested. If the embarrassment has some justification, the speech correctionist devises means to cancel it. The clinician may penalize shame and embarrassment by exaggerating them in a verbal way and by requiring the stutterer to do likewise. The stutterer may be asked to read his woebegone account of the situation over and over again, until it loses meaning or importance. In altering the environmental intolerance toward any stuttering symptoms, the clinician should attempt to educate the stutterer's associates with respect to the remedial methods employed. When they understand what the stutterer is doing and why he is doing it, the intolerance usually disappears. The stutterer himself can do much to alter his environment in this regard.

Training in the erection of psychological barriers against disturbing influences. Anyone who has associated with severe secondary stutterers realizes how quickly they are

affected by any disturbing influence. The mere threat of interruption reduces them to a paroxysm of unintelligent random behavior. They are the victims of every communicative pressure. They feel the need to respond instantly to every question. They scrutinize their auditors for any hint of penalizing response and exaggerate whatever they see. They constantly accept the listener's evaluation of their behavior and are therefore at the mercy of anyone to whom they talk. This helpless state is naturally one which greatly interferes with treatment. For these reasons, the speech correctionist insists upon the stutterer's making some daily achievement in the erection of psychological barriers against these disturbing influences.

This phase of the treatment seeks to train the stutterer: (1) to use the delayed response whenever confronted by a pressure for immediate communication; (2) to ignore those audience reactions which tend to disturb him; (3) to master his environment by changing and controlling adverse audience reactions; and (4) to evaluate his behavior in terms of his own greater understanding of his speech problem rather than in terms of the audience's less insightful evaluation. Daily assignments are designed so as to create certain of these disturbing influences and to demand a resistant and well-controlled response.

1. Write the names of two people with whom you paused for a count of twenty before answering their questions.

2. Go to the Economy Cleaners and say, "I believe you have a package for me." This will cause the clerk to ask your name. Before you answer, observe her carefully so that you can describe her eyes, hair, and dress. Then say your name without hurrying.

3. This is what we call a "fool situation." It is devised to teach you that because a clerk thinks you are a fool, her opinion does not actually make you one. Go into a grocery, walk straight to a vacant place at the counter and wait until the clerk comes. Look her in the eye and say calmly and directly, "Can I leave my watch here to be fixed?" Observe the expression on her face

without responding. If she asks you to repeat, do so very deliberately and without hurrying. When she answers you, with pity or anger or incredulity, observe her reaction, as though you were studying that of a guinea pig, thank her, and leave. Be prepared to analyze your behavior and hers. If you perform the assignment successfully, you will find a great surge of self-respect and security. You will realize that you are no longer the victim of any person who wishes to think poorly of you. If you fail, ask some other stutterer who has performed these assignments successfully to show you how independent of disturbing influences one can be.

4. Collect the names of five people who have interrupted you without causing you to stop the rest of the sentence.

5. In the Postal Telegraph office, there is a girl who will laugh in your face whenever you stutter. Ask her where the post office is and fake a long repetitive spasm on "post office." When she laughs, ask her why she does so. Say that you are working on your speech and that people often laugh when you stutter, and that your teacher asked you to find out why they did. Report her answer.

6. Go downtown to the stores and price different articles, faking blocks on the word "price" until some clerk says the word for you. Thank her and ask her if she would mind if you tried the word again. Note whether her attitude changed after your request.

7. Write out a sentence you could say to change the attitude of a person who says, "Hurry up and say what you want to. I don't have all day."

8. Find some listener who consistently looks away when you stutter. Try to change this behavior by getting into a discussion of stuttering, during which you can point out that looking away is not usually relished by any handicapped person. Report your experience.

9. Fake a block or have a real one, and grin after the word comes out. Say, "That one sure got away from me, didn't it?" Smile again and continue without further comment. What was the audience reaction to this technique?

Analysis and understanding of the stutterer's fears and blocks during the stuttering act. People unacquainted with the phenomenology of stuttering might think that the

stutterer, of all people, should know what he does when he gets blocked on a word. Oddly enough, this is seldom the case. Few stutterers who have not been trained in the analysis of their symptoms can tell what happened, even when the blocking has just occurred. The fears are too disturbing and the approach and release reactions are too habitual. Since our therapy is aimed at the control and modification of fears and symptoms, this vague and confusing experience must be clarified. The stutterer must come to know just what he does when he approaches a feared word or situation. He must study his anticipatory and release reactions before he can hope to eliminate them. It is interesting that this analysis itself reduces much of the fear and shame associated with the disorder.

In the chapter concerning speech tests, a detailed outline of such a symptom analysis is given. It is not sufficient that the speech correctionist make this analysis; the stutterer must also construct his own. He must come to recognize the avoidance, postponement, timing, disguise, and anti-expectancy devices that characterize his own particular type of stuttering, and he must do so experientially rather than theoretically. When he uses an interrupter device to release himself from block, he must recognize it immediately. He must know instantly when he perceives a word in terms of its first letter or some of its parts rather than as a whole. He must know what social penalty he dreads when he finds himself afraid of a certain speech situation. After he is able to accomplish these things, the confused, panicky state will no longer continue to exist and he will be able to reject and modify the old characteristic reactions that contribute so much to his handicap.

The speech correctionist must always guide the stutterer in the study and analysis of his stuttering symptoms. At first, the stutterer's attention should be called to the presence of these symptoms whenever they occur during the

clinical conference. The speech correctionist should interrupt the stutterer and describe just what took place. Other stutterers more versed in symptom analysis should sit in front of a mirror with the student and comment on each device as it occurs. The stutterer should be taught to verbalize his thoughts as he approaches feared words and situations. He should be assigned to collect characteristic samples of his stuttering behavior and to duplicate them on demand. The clinician may imitate the stutterer's reactions and may objectify them by means of a phonograph recording. As a final culmination of this phase of the therapy, the stutterer should write out a detailed symptom analysis of his own stuttering. The work can be motivated by showing the stutterer that most of the therapy specific to the second period of treatment is based upon the disruption of these old reactions, and that he must therefore learn to recognize them when they occur. Daily assignments in the study of his symptoms are always given to the secondary stutterer in the first period of his treatment. Some typical examples follow.

1. Study the postponement devices of some other stutterer and use one of them on a feared word in a telephone conversation. Hand in a written account of the experience.

2. During the noon hour, record every variety of starter that you use to initiate speech attempt. Does a starter always follow a postponement?

3. Collect five examples of your attempts to disguise your stuttering. Be able to demonstrate them to your clinician.

4. Find out when the city bus company's franchise expires. Write a paper on what went on in your head prior to entering the situation. What visualization or rehearsal of the situation occurred?

5. Collect thirty words on which you used force sufficient to set up a tremor in your lips.

The systematic study of stuttering as a speech disorder.
Although sheer faith in a theory concerning the nature,

causes, or treatment of a disorder can diminish fear and motivate therapy, we believe that the best basis is a reasonable one. Confidence based on clinical suggestion and urging to believe is subject to devastating disruption when the stutterer is confronted by self-criticism or the criticism of others. For these reasons, we believe that free discussion and study of all points of view concerning stuttering are a necessary part of the therapy. Every assignment, every pronouncement of the speech correctionist, must be able to be justified. The stutterer is always urged to challenge anything which he does not understand. Free discussion and the appeal to reason are the twin bases for this type of treatment. The more advanced and older stutterer should study the research, the history of treatment, and the etiology and development of stuttering. He should be able to talk intelligently concerning the disorder and attempt to dispel some of the ignorance concerning it. It might be thought that such a program would confuse the stutterer and interfere with treatment. Our experience, however, is all to the contrary. There is much we still do not know about stuttering, but the stutterer has a right to realize this. We know enough to carry out a successful therapy for the majority of secondary stutterers, and the individual stutterer will soon come to this conclusion despite the theoretical confusion which exists.

Daily assignments in the study of stuttering as a disorder are always given. The stutterer may be required to write synopses of articles or books. Questions concerning the material in certain selected references may be answered. He can prepare himself to give short talks on different phases of the disorder. Debates on the etiology of stuttering provide excellent motivation for group work. The lectures of the speech correctionist may be summarized. Statements of the clinician or of the authors of texts in speech correction may be challenged. Little experiments

in stuttering may be formulated and performed. Misunderstandings or confusions can be expressed. There are many other ways in which stuttering as a disorder may be studied, and the speech correctionist will soon discover them.

Summary of the activities in the first period of treatment.

In order to summarize the activities of this first period, a set of actual assignments for one day is given.

1. Unilaterality. Hand in three pages of talking-and-writing. Spend ten minutes in vertical board writing and record time and place. Thread a needle, held by some other person, within five seconds.

2. Rhythmic training of paired muscles. Protrude tongue and tap with forefinger of proper hand simultaneously with beating of metronome set at three speeds for thirty-second intervals. Record speeds used and number of clonic repetitions experienced.

3. Eliminating avoidance. Write down all words for which you substituted a nonfeared word during the three mealtimes. Go to a hotel and ask if a person by your own name is registered there. Take some other stutterer with you to watch avoidances.

4. Self-improvement. Make an appointment with the health service for a dental examination.

5. Changing mal-attitudes. Smile ruefully, though good-naturedly, after three bad blocks and record the word on a card. Explain that you are working on your speech defect and are required to record all the hardest words. Note reaction of your audience.

6. Erecting psychological barriers. Ask your clinician to supervise one phone call today and to help you with each word on which you stutter. Refuse to become angry and thank him before continuing.

7. Analysis of symptoms. Record ten words beginning with a voiced consonant in which you put your mouth or tongue in position long before you bring in the voice. This is called preformation.

8. Study of stuttering as a disorder. Read the first two chapters in *The Nature and Treatment of Stammering*, by Boome and Richardson. Find three statements which you would like to challenge because of your own past experience.

The above assignments were all performed in less than two and a half hours of actual work. The stutterer attended three regular college classes, worked three hours for his board and room, and still had time for study and recreation. The assignments were reported and discussed in a conference lasting twenty minutes, and new assignments were then given.

The second period of therapy. After the stutterer has had a good deal of experience in using the techniques and a good deal of success in attaining the goals of the first period as described in the last section of this chapter, he may be permitted to add a new goal and new techniques. This new goal may be described as the alteration of the spasm pattern, the modification of the form of stuttering. The secondary reactions of expectancy and release must be disrupted and largely eliminated. Reactions to the fear and occurrence of stuttering block must be discarded. The tricks of postponement, or initiation and release, must be eliminated. Since these reactions are usually habitual, the techniques consist mainly of assignments and projects to break those habits. As in the preceding period, the stutterer is urged to greet fear with speech attempt and without avoidance, no matter whether or not stuttering occurs, but he is urged to stutter without the tricks and habitual reactions of postponement, initiation, anti-expectancy, and release. He is shown, through study of the spasm patterns and symptoms of other stutterers, that it is possible to stutter in a great many ways and that a large share of his abnormality consists of particular reactions he has learned to use when fear or occurrence of block takes place. All of the preceding techniques are continued and constantly reinforced, but his new task is to get rid of the bad habits which he has developed because of his stuttering, to get rid of the secondary symptoms.

Most of these secondary symptoms are integrated into

sequences called spasm patterns. Some stutterers have only one spasm pattern set off by all the cues causing fear of approaching words. Many stutterers have several, each set off by certain cues. Thus one stutterer approached all feared vowel words by holding on to the last mouth posture of the preceding word, inhaling quickly, and making the speech attempt, which, if it resulted in block, was immediately stopped and the sequence repeated until no block occurred. On words beginning with a plosive, she began with a vocalized postponement device similar to the neutral vowel *a*, which usually terminated in a head jerk as an interruptor device. These spasm patterns are often very complex, but the stutterer must be able to identify and analyze them before he can hope to get rid of the individual reactions which are their components. Much of this is done through the self-study and analysis mentioned in the last section. Often the stutterer has a series of such spasm patterns at his command, using the least objectionable one first, then the next, and, finally, if neither of these provides release, using that which involves the most hypertension and abnormality. Thus the first new therapy in this period should consist of the identification and variation of the stutterer's spasm patterns. They should be faked on non-feared words and varied on feared words. New reactions may be interjected into their midst. The stutterer should attempt to stutter with spasm patterns used by other stutterers. Through these methods, the spasm patterns may be broken up into their components.

After the preliminary work of identifying and disrupting the stereotyped spasm patterns has been accomplished, the stutterer may proceed to the next step—that of getting rid of the individual reactions, one by one. It is wise to take the postponement reactions first, then the starters, and, finally, the release reactions. If the stutterer asks, as he often does, how he should stutter if he cannot use these

reactions, the clinician should answer that it makes no difference, so long as they are kept out. Only one reaction should be worked on at a time, but, after it has been fairly well rejected, it must be kept out from then on, even though a second reaction is being worked upon.

Many individuals believe that a habitual reaction can be eliminated only through substitution of another reaction in its place, but we have found that a more efficient method is possible. Substitution of a new habit is used, but it is introduced only after the original habit has been weakened, and it will be described in the next section concerning the third period of treatment.

During the second period, a good share of the therapy is devoted to the weakening of the secondary symptoms. Often the system is so successful that the secondary symptoms are eliminated entirely. The procedure employs oral reading, conversation, or the pronouncing of feared words during the conference with the speech correctionist, and also the use of speech assignments to provide sufficient stuttering. It is important that the stutterer have enough stuttering blocks, or he will never learn to get rid of the reactions which constitute so large a share of his handicap.

Having closely identified the reaction to be eliminated or weakened, we plan a definite program for getting rid of it. We do this through the following methods: bringing the reaction up to consciousness, attacking the purpose of the reaction, eliminating the cues which set off the reaction, breaking up the pattern of the reaction, and penalizing the reaction. Illustrations of each are now given.

We bring reactions up to consciousness by: (1) checking one's own reactions; (2) having someone else check the occurrence of the reaction; (3) predicting the occurrence of the reaction; (4) faking the reaction on nonfeared words; (5) repeating the reaction, voluntarily, after it has occurred involuntarily; (6) associating the reaction with

other attention-getting stimuli (whistling); (7) collecting quotas of the reaction; (8) having the clinician point it out in situations where it will be very vivid; (9) using mirror work, phonograph recording, and so on.

We attack the purpose of the reaction by: (1) identifying the purpose the reaction serves; (2) showing how much the reaction contributes to the handicap (breathing records, photographs, and phonographic records); (3) demonstrating that it is possible to stutter in other ways; (4) demonstrating that the reaction contributes a great deal to the fear and panic; (5) showing, by mental-hygiene assignments, that temporary fluency is insignificant when compared to future consequences, and showing that temporary expedients are no solution to the stutterer's real problem; (6) ruining the service performed by the reaction by having the stutterer fake a long bad spasm immediately after its occurrence; (8) building up, by self-suggestion assignments and strong clinician attitudes, a feeling that the presence of the reaction is a failure and a defect, and thus building up a conscience against it.

We eliminate the cues that set off the reaction by: (1) isolating and identifying the cue: words, sounds, sound combinations, word length, word familiarity, speech situations, confusions, chain reactions, and emotional states—the cues which commonly precede the use of the reaction and set it off; (2) demonstrating how often the cues are followed by the reaction (focus attention on this obvious lack of correlation); (3) using drills which present the cue material (words, situations, and so on), which the stutterer attempts to utter without the use of the reaction, employing penalties if failures still occur; (4) associating other, and incompatible, reactions with the same cues; (5) attaching absurdity to the cues; (6) presenting drills designed to get stutterer to reconfigure the cue material; (7) teaching the philosophy of the objective attitude

toward stuttering; (8) teaching the stutterer ways of controlling audience reaction to his stuttering; (9) teaching methods of decreasing situation difficulty; (10) reconditioning "Jonah" words and sounds.

We break up the pattern of the reaction by: (1) manipulating and varying the stereotyped reaction pattern, the sequence; (2) prolonging the reaction far beyond its expected and normal course; (3) exaggerating the reaction; (4) interjecting other abnormality; (5) reversing the sequence of the reaction and practice; (6) interrupting and rejecting in the middle of the reaction; (7) practicing a modified reaction.

We penalize occurrence of the reaction by: (1) speech penalties: (a) silence for rest of hour, (b) addition of greater abnormality, (c) faked repetition of the same reaction as closely as possible, (d) repetition of whole sentence, (e) restimulation; (2) physical penalties: (a) shock per spasm or group of spasms, (b) deprivation of pleasure; (3) ludicrous penalties.

The above techniques may be illustrated by the assignments given below. They do not represent all of the day's speech-correction activities of the stutterer to whom they were given, since they do not include those representative of the first period of therapy. The stutterer in question had possessed three major secondary symptoms. He characteristically postponed by repeating preceding words two to six times, depending on the intensity of the fear. He also used a sudden quick head jerk to time the moment of speech attempt. Finally, he maintained and prolonged the original tongue or lip position on all plosive sounds, forcing and struggling until his face was convulsed and scarlet. At the time the assignments were given, the postponement device had almost entirely disappeared, thus freeing his speech of much abnormality, and the clinician had begun to work on

the head jerk which was used as a starter. The assignments which were used are as follows:

1. Bringing the reaction up to consciousness. Since you never fear the word "and," you are to use the head jerk to time the moment of speech attempt on this word whenever you say it in three phone calls and in requesting information of two strangers. Report whether it made you conscious of some of the involuntary head jerks on other words.

2. Attacking the purpose of the reaction. Ask Harris to tell you about his experience with various tricks for starting feared words. Be able to sketch the manner by which starters grow into tremendous contortions. Why is it that starters sometimes do not "start"? Collect ten feared words which you attempted without the head jerk and compare the amount of abnormality with that on those timed with the head jerk.

3. Eliminating the cues that set off the reaction. On words beginning with one of the following three sounds you never use the head jerk, no matter how badly you stutter: *s, k, m*. Discover which of these initial sounds does not serve as a cue for the head-jerk symptom. Write a short paper on "Is a head jerk truly a necessary part of my stuttering?"

4. Breaking up the pattern of the reaction. As you have seen in the mirror, you always press your lips together immediately before jerking your head upward. Collect ten feared words in which you jerk your head downward and five words in which the lip pressing does not occur.

5. Penalizing the reaction. Collect five instances of involuntary head jerks which you penalized by faking a very slow and abnormal prolongation immediately after the timing symptom was used.

The stutterer will soon find that a daily regime of this sort, when supplemented by the activities of the previous period, will eradicate almost any symptom which is subjected to such a thoroughgoing clinical attack. He will learn, much to his surprise, that these secondary symptoms are not an integral part of his disorder, that it is possible for him to stutter without using them, and that their dis-

THE TREATMENT OF STUTTERING

appearance greatly decreases the abnormality and interruption. He finds himself controlling the form of his stuttering. He realizes that he is master of the handicap. The disorder begins to disintegrate, and with it go the fears that caused him so much agony. He comes to welcome the fear of a word as a challenge to his ability to modify the form of his symptoms and as an opportunity to make further progress. When fear is welcomed, it begins to disappear. As it does so, the number and severity of the blocks diminish. Some stutterers become entirely free from their fears after going through this second period of treatment, and since their blocks are of short duration and possess little abnormality when they do occur, they are not perceived as being important enough to matter. They communicate freely and that is sufficient. If, in the future, they do stutter, they insist upon a form of stuttering in which the old secondary symptoms do not occur, and they remain content. One of them said, "Sure, I get blocked once in a while, but I never force or postpone or make faces like I used to, and the block is over before I know it. I'm satisfied with my speech. I've licked the handicap." Other stutterers seem to require substitute reactions to the fear or occurrence of block, and, for these latter individuals, the third period of therapy will now be discussed.

The third period of therapy. In the third period, a new goal and new techniques are again added. This new goal is the establishment of a new type of stuttering, a new spasm pattern. The new type of stuttering should be one which is of short duration and little abnormality, in either vocalization or associated movement. The previous goals and methods are still part of the therapy. Assignments are given daily to reinforce and review them. But in this third period, instead of negatively trying to eliminate and reject old reactions, the stutterer attempts to learn a new reaction, a new way of stuttering. Since old habitual reactions are

also broken by substitution of new ones, this therapy serves a double purpose. It also reinforces the mental-hygiene aspect of the therapy, since stutterers will not be nearly so likely to avoid, disguise, or develop emotional maladjustments about stuttering which does not thwart or socially penalize them. It tends to shave the reactions to stuttering to a minimum, leaving little but the neurological block. In every sense of the word, the stutterer can afford to stutter. Both the primary and secondary reactions which form so large a share of the handicap are usually eliminated. When this happens, the fears of words and situations largely disappear, since one cannot be afraid of that which is not unpleasant. Indeed, when the stutterer learns that it is possible to stutter in a way which carries no thwarting or social penalty, his successful control of the blockings is actually pleasant.

The procedure for teaching the new type of stuttering may be outlined as follows: (1) teaching the stutterer to make direct and integrated speech attempts without preliminary reactions; (2) teaching the stutterer to use the fear of stuttering as a reminder that he must adopt a preparatory set for release when and if a block occurs; (3) teaching the stutterer to use the feeling of block as the signal to set off the preparatory set. These will now be explained in detail.

As we have previously pointed out, the usual secondary stutterer commonly reacts to the perception of probable stuttering on an approaching word by various reactions of postponement, avoidance, starting, and so on. Indeed, much of his abnormality comes prior to the actual speech attempt. And, besides the more obvious reactions above mentioned, he frequently makes the speech attempt using slight rehearsals of the difficult sound or tentative preformations (such as opening the mouth prior to vocalization of a word beginning with a vowel). Many adult stutterers

never make a direct wholehearted attempt on a feared word. They never give it, as one stutterer phrased it, a "real sock." Sometimes they split their words into parts, and the sounds that compose the words into still smaller fractions, such as mouth or tongue posturings. Their usual reaction to fear is a sampling, tentative, equivocal speech attempt. Although, in the second period of therapy, we attempt to tear down these reactions as much as possible, a more positive approach is necessary. Words must be integrated, and speech attempts must be of the all-or-none variety.

Through the use of reading, word lists, prewritten conversation, and similar speech material, the student should signal to the speech correctionist the approach of a feared word. He should then be instructed to pause, not for postponement but to insure intelligent attempt, and to reject all rehearsal or anticipatory reactions. He should then make a sudden, direct speech attempt to say the word as a whole. If a failure occurs, he should be asked questions similar to the following: Did you refuse to react in any way prior to the moment of speech attempt, remaining entirely quiet and passive? Did you try to say only the first sound or the whole word? Did you make a halfhearted attempt, or did you risk everything on the single trial? Did you stop or force the moment you felt blocked? Did you finish the word as soon as the sensation of being blocked disappeared?

The answers to these and related questions will soon bring out the cause of the failure to make a direct unified speech attempt. Often the stutterer will need much practice in these isolated direct speech attempts on feared words before he can eliminate the strong tendency to equivocate that is a part of the stutterer's usual approach. Often it is necessary to put strong clinical pressure on the stutterer before he will really try to say the word as a whole. Occa-

sionally, for the purpose of pedagogy alone, he can be required to tie up the speech attempt with a gesture or a signal given by the clinician. Such muscular reinforcement can be very vicious if used too frequently or in the same manner for each attempt, for then it becomes a mere starter or distractor. It is often wise to stop the stutterer just prior to speech attempt and question him as to whether he was planning to fulfill the requirements of a direct, unified word attack. The stutterer should be required to write down the words on which blocks occurred, checking each in terms of items given in the questions listed above. He should be asked to collect quotas of perfect speech attempts. No attention should be paid to the presence or absence of blocking, as long as the stutterer makes a perfect speech attempt with no prior rehearsal, without mouth posturing or tentative approach, and with a strong intent to attempt the word as a unit. Even though failures occur, the student should not be permitted to stop and to start over before completing the word. Forcing should be taboo, however long the block manifests itself.

Often the stutterer will need to change the configurations of words, and should be given a good deal of practice in this. For example, the word "rabbit" always appeared to a certain stutterer (when it was feared) as "raa.BBit," with a prolonged *a*, a short period of absolute silence, then the major syllable as a separate speech attempt, with inevitable speech block occurring on the *b*. The word itself was seen as a "*b*-word," even though it began with an *r*. This configuration, however superficially described here, was a very dominant and consistent one. The word was never unitary, either in perception or in speech attempt. This fact was pointed out to the stutterer, who was asked to reject the old configuration prior to speech attempt, to see the word as a unit, to see it as an "*r*-word" rather than as a "*b*-word," and to see it without a prolonged *a* or a pause

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sionally, for the purpose of pedagogy alone, he can be required to tie up the speech attempt with a gesture or a signal given by the clinician. Such muscular reinforcement can be very vicious if used too frequently or in the same manner for each attempt, for then it becomes a mere starter or distractor. It is often wise to stop the stutterer just prior to speech attempt and question him as to whether he was planning to fulfill the requirements of a direct, unified word attack. The stutterer should be required to write down the words on which blocks occurred, checking each in terms of items given in the questions listed above. He should be asked to collect quotas of perfect speech attempts. No attention should be paid to the presence or absence of blocking, as long as the stutterer makes a perfect speech attempt with no prior rehearsal, without mouth posturing or tentative approach, and with a strong intent to attempt the word as a unit. Even though failures occur, the student should not be permitted to stop and to start over before completing the word. Forcing should be taboo, however long the block manifests itself.

Often the stutterer will need to change the configurations of words, and should be given a good deal of practice in this. For example, the word "rabbit" always appeared to a certain stutterer (when it was feared) as "raa.BBit," with a prolonged *a*, a short period of absolute silence, then the major syllable as a separate speech attempt, with inevitable speech block occurring on the *b*. The word itself was seen as a "*b*-word," even though it began with an *r*. This configuration, however superficially described here, was a very dominant and consistent one. The word was never unitary, either in perception or in speech attempt. This fact was pointed out to the stutterer, who was asked to reject the old configuration prior to speech attempt, to see the word as a unit, to see it as an "*r*-word" rather than as a "*b*-word," and to see it without a prolonged *a* or a pause

between syllables. He then was asked to review these items and to integrate the word in the new way, prior to attempt, then to make a sudden and complete trial. He paused, however, between syllables and was stopped and given a humorous penalty and requested to integrate the word perceptually, paying especial attention to eliminating the pause and making a unified speech attempt. This time, even with great fear, he was successful in the unification of the word, although a short block appeared on the *r* and another slight one on the *b*. Several other similar attempts at restructuring the word prior to speech attempt soon taught him the methods and necessity for altering the stuttering configurations. Restructuring involves unification, the minimizing of former features, and the development of new features which contribute to the organization of a word-whole. The old configuration must be recognized, then rejected, and then replaced by a new one whose function is to facilitate direct, unified, wholehearted speech attempt. The stutterer must collect words that are feared and train himself in these skills. At first a great deal of conscious organization is required to accomplish this, but the preparation soon becomes a habitual accompaniment of fear, and the restructuring takes place almost automatically. By the time the stutterer has succeeded in making clean-cut, integrated speech attempts on five hundred or a thousand feared words, he has gained a great deal. Without true speech attempts no one can hope to eliminate the old secondary symptoms of stuttering.

It is next necessary to control the form of the stuttering symptoms resulting from the feel of block. As we have said, the stutterer often makes a seemingly perfect speech attempt, only to find himself in rapid clonic or tonic block. These may last for varying lengths of time, even when forcing is not present, although it usually is. If the stutterer is observed closely at these times, two facts will be noticed.

First of all, certain of the stutterer's articulators are in a state of tremor, and, secondly, the final release seems to be automatic and involuntary. The stutterer does not end the block. It ends, and the stutterer is then able to complete the word. Stutterers frequently testify as to the compulsive nature of the block. They feel "stuck." These subjective and objective aspects of the stuttering spasm can be explained in terms of the functioning of a preparatory set.

It is our contention that in stuttering the preparatory sets determine the form of the stuttering block or spasm and are the cause of the stutterer's feeling of compulsion. It is odd that one of the most interesting and promising phases of the problem of stuttering, the part played by preparatory sets, has received so little attention from speech pathologists. The phenomena and functioning of preparatory sets are to be found in all forms of voluntary behavior. The runner, crouched in preparation for the pistol shot, the car driver awaiting the green "go" signal, and the typist and the pianist in activity illustrate their importance.

It would seem wise to define and describe the preparatory set. In psychology many different terms have been employed to name it. It has been called the *aufgabe*, the *einstellung*, the determining tendency, and the attitudinal set, and all of these may be included in the description of a preparatory set as *a prestimulus neuromuscular adjustment which selects, determines, and controls the response to the expected stimulus*. As in foot-racing or reaction-time experiments, there is usually (1) a warning signal which gives rise to (2) a neuromuscular adjustment consisting of tiny rehearsal movements or patterns of appropriate muscle tensions (tonus) which, when (3) the expected signal occurs, result immediately and involuntarily in (4) the predetermined response.

In any stuttering block all the above conditions are usually present. A certain cue, (1) the perception of the word, or one of its sounds, as being difficult, acts as a warning signal to arouse the specific expectancy of stuttering on that word. (2) This specific expectancy is no vague abstraction, but consists mainly of tiny rehearsal movements and increases in tonus of the musculatures to be used in the stutterer's characteristic way of stuttering or spasm pattern. (3) Always there is the expected signal, the feeling of block or "getting stuck," or of finding himself repeating or prolonging a vocal or articulatory posture. When this occurs, the preparatory set is released, and the overt performance follows in its characteristic fashion.

The stutterer feels that he has no control over this stuttering performance—that he is seized by a compulsion to react in this abnormal way. The reason for this commonest of all stuttering experiences is that the stutterer does indeed have a compulsion to react peculiarly, and that he can neither control nor help himself at the moment. But the reason for his inability and compulsion lies in the power of the preparatory set to determine and control the response to a signal. The runner with a preparatory set to run at the command will run even though the starter cries "jump."

Recent research has shown that the stutterer can predict the duration of his blocks and that he frequently rehearses the form of the block prior to speech attempt. This seems to mean that the stutterer assumes a preparatory set to react to a certain duration or type of abnormality which, when completed, permits release. In other words, the expected signal is a duration signal. He expects a speech interruption of perhaps five seconds. He makes the speech attempt. Block occurs and continues for the five seconds. The expected duration has occurred, satisfying the preparatory set, and the automatic release takes place, the stutterer completing the word without effort. If, prior to speech

attempt, the stutterer gets set for a certain duration of block before release, such a duration of block will occur. In easy situations and with little fear, the stutterer will expect and get set for short blocks and will have them. In

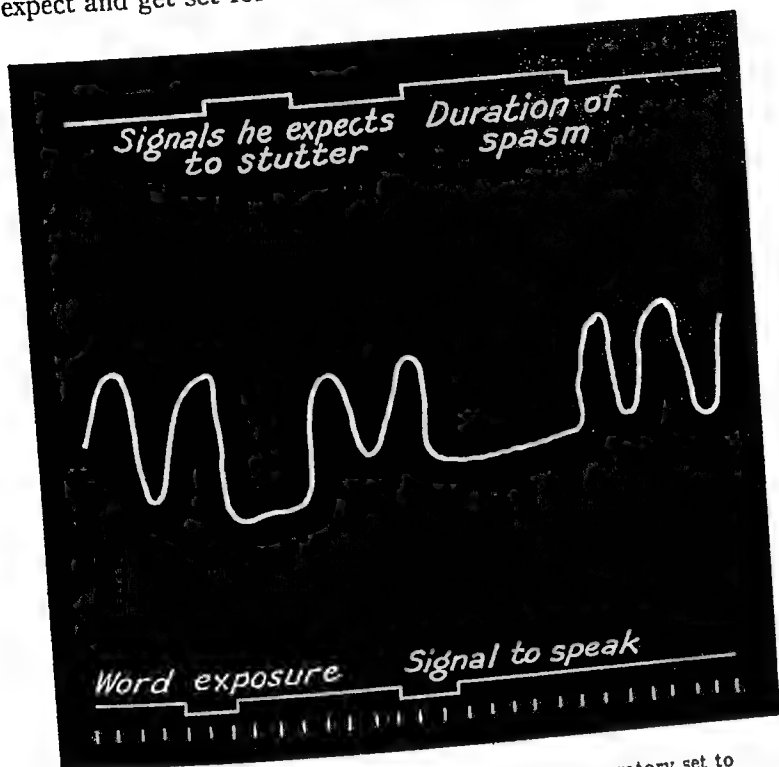


Fig. 23. Breathing record showing evidence of preparatory set to stutter on residual air.

hard situations or on greatly feared words, he will assume a preparatory set for a longer duration of block, and, when the duration of the overt blocking has satisfied the preparatory set, release will take place. Thus the stutterer feels an inability to proceed until the spasm has run its course. Preparatory sets to react to duration signals are peculiarly

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handicapping in that the duration of block will be proportional to the amount of fear. As long as this is the case, the stutterer is the victim of his emotional states, and has no possibility of controlling the duration of his blocks.

How then can such control be gained? The answer is simple: the stutterer must assume a preparatory set to react to some signal other than duration. The signal that we recommend is the experience of block. We ask the stutterer who approaches the feared word to get set to release the moment he senses the block. He rejects the old preparatory set to react to a duration signal, then assumes a new preparatory set to react to the first "feel" of block. He then makes a direct unitary speech attempt, trying to say the word as a whole, but with an alert expectancy of block as a signal to go on to the rest of the word. If this signal occurs, the preparatory set fulfills itself and the release occurs automatically, even as the runner lunges automatically when the pistol shot rings out. He must use as the signal the very first awareness of block, not a certain duration thereof. Therefore, fear is used as a warning to assume a preparatory set, and the sensations of being blocked are used as the signal to release the predetermined reaction. Thus we use the two ever-present features of secondary stuttering to produce blocks which are of short duration and without evident abnormality. Instead of avoiding fears and blocks, we use them to produce a type of stuttering which is not unpleasant.

In order to teach the use of preparatory sets as tools to control the form of the stuttering blocks, it is necessary to do the following things: (1) teach the stutterer that the preparatory set does determine the type of reaction; (2) teach the stutterer to reject the old preparatory sets to react to duration signals; (3) teach the stutterer to react in other ways to the awareness or experience of block; (4) teach the stutterer a preparatory set to stop and say the rest of

the word when block occurs; (5) provide opportunity for practice in assuming and fulfilling these preparatory sets; (6) build up the success-failure ratio not only in easy but in hard speech situations; and (7) cancel failures. These will now be described in more detail.

The stutterer may be taught that the preparatory set determines the type of reaction by studying the literature on such sets and by simple little experiments such as those involved in reaction-time experiments. For example, he is instructed to press his finger on the table and to close his eyes as he assumes a preparatory set to yank it upwards when he hears the experimenter tap. He is told to react the instant he hears the tap. As soon as the stimulus is given, the reaction will occur automatically and involuntarily. The analogy to stuttering is pointed out. He is then told to press hard the moment the signal is given, and the new preparatory set will create a new automatic response. He is then told to prolong the first sound of a word such as "man," maintaining the *m* but getting set to say the rest of the word the instant the teacher raps on the table. Again the reaction will occur automatically and as determined by the preparatory set. Through these and other easily invented techniques, the stutterer will soon learn the mechanics of preparation and instantaneous reaction to a predetermined signal.

In order to teach him to reject the old preparation for release when a certain duration of block has taken place, he is given a feared word to pronounce. He estimates about how long a block he is likely to have, then consciously attempts to reject this estimation and to prepare for a shorter block. He then attempts to say the word and notes that this rejection altered the duration of the overt blocking. The estimations can be made through the use of a polygraph recording of durations of expected and overt blocks. It may also be done by asking him to rate the expected

duration on a five-step scale (1 representing a very short block and 5 a very long block). He then assumes the new preparatory set, makes the speech attempt, and compares the rating of the actual block with that expected. Through similar techniques he will soon learn that it is possible to reject one preparatory set and to adopt another, and that the most dominant set will determine the reaction.

In order to learn to use the awareness of block as a signal, the stutterer should be asked to react to it in various ways. At first, the teacher may read certain sentences, faking spasms at odd times. The student should be set to react to the first sign of block in the teacher by yanking his finger or doing something else similar thereto. He must be trained in this alert expectancy, and the reaction should be instantaneous and involuntary. He should then be asked to do the same thing when he himself reads the sentence and block occurs. Care should be taken that the stutterer does not react to the fear but to the actual "feel" of blocking. Single words may be written on cards and exposed. The student then gets set to make the speech attempt to say the word as a whole, but prepares to react to the first feel of block by stopping and protruding the tongue or abdomen or yanking up his hand from the table. A little practice with this will show him that it is possible to use the awareness of block as a signal to set off any predetermined reaction.

The next step consists of using similar feared words to teach the stutterer to employ the awareness of block as a signal to *stop and say the rest of the word*. A feared word is presented to the stutterer. He is told to reject the old preparatory set to have a certain duration of spasm, and to assume a new preparatory set to stop and say the rest of the word the instant that he feels blocked. He is cautioned to make a direct and unified speech attempt to say the word as a whole. He carries out these instructions and finds

that the word either comes out without block or that the first perception of block was followed by an automatic and involuntary release, resulting in the production of the rest of the word. The blocking and interruption itself was almost unnoticeable. In terms of the auditory picture, the interruption consists of a tiny catch in the sound sequence of the word. It is often so slight that even the trained ear cannot hear it, although the stutterer feels it very vividly. The release is automatic and without conscious effort. The preparatory set determines the response, and the stopping and going on with the rest of the word takes place the moment the stutterer becomes aware of the block. Through this procedure the stutterer learns to control his stuttering, using the fear as a warning to assume a preparatory set, and the feeling of block itself as a signal for release and the completion of the word. Once he learns that it is possible to stutter in a short, effortless fashion, he becomes willing to stutter, and the fear melts away.

At first it is necessary to use a high degree of conscious preparation, and the teacher should provide a great many opportunities for segregating the feared words and insisting upon careful preparation, quick recognition of the blocking, and instantaneous reaction. The stutterer should be assigned quotas of perfect reactions under various conditions, and he must come to realize that at first a good deal of conscious preparation and organization is needed to enable him to substitute the new preparatory set for the old one. The contrast between a preparation for a duration signal and a preparation for an awareness signal should always be clear. Through the use of reading material, word lists, prewritten conversation, and speech assignments with definite wording, the stutterer will learn how to stutter with a minimum of interruption and abnormality. Soon the new preparatory set for a quick "stop-and-go" reaction will become generalized and habitual and stronger than the old set

It will be dominant over the old in all ordinary situations. The stutterer should always seek to use specific and conscious preparation rather than the generalized set in situations where there is much fear. He should cancel all failures by imposing penalties and by getting successes in other difficult situations. As in the learning of any skill, there will be a certain amount of failure. Failures are needed for learning. The stutterer's task is to increase the ratio of successes to failures without becoming emotional over the latter. With proper training, the stutterer gains a technique which will be serviceable all of his life. Whenever fears arise, he has a means of using them to control the amount of his speech abnormality. Whenever stuttering blocks occur, he can keep the reactions to them from creating a handicap.

Once again we wish to make it clear that the techniques used in any one of the three periods of stuttering therapy continue through all subsequent periods. Even in the third period, the student uses pseudo-stuttering to demonstrate his good mental hygiene, studies his reactions, builds up his self-discipline, and carries out his program of unilateral motor lead control. Occasionally, progress is very rapid. Usually it is a matter of many months or even years. Everything depends upon the stutterer's personality problems, motivation, understanding, and self-discipline. No cures can be predicted or guaranteed. Nevertheless, such a program as has been sketched in this chapter is certain to modify, alleviate, or eliminate the handicap of stuttering.

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2. 88 percent of the words on which stuttering was expected were stuttered upon. 3. When a cue which had been associated with a difficult situation was introduced into a situation previously considered "easy," the stuttering increased significantly in the latter situation. 4. Expectation of stuttering need not operate on a highly conscious level. 5. Stuttering is reduced 98 percent when expectation of stuttering is eliminated. 6. When words previously stuttered upon in a passage were omitted, future stuttering occurred on words closely associated with those omitted. 7. The use of changes of speech patterns serves as a distraction which decreases the frequency of spasms.

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An article describing the importance of devices used by stutterers to avoid or minimize their speech difficulty. These devices are said to become habitual parts of the speech abnormality. Since they are habits, they may be broken, and a plea is made for symptomatic therapy.

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Suggested procedures for a rational method of attempting to solve the problem of stuttering, including the study of each stutterer as an individual personality, use of mental hygiene, the instruction of parents and teachers in mental hygiene, and research into therapeutic techniques.

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Cleft-Palate Speech

Although cleft-palate speech, like foreign dialect, is characterized by articulatory and voice defects and hence could be classified under both disorders, the consonantal substitutions, omissions, and distortions and the qualities of the various vowels are so peculiar that they demand separate treatment. The disorder may vary from a very slight nasal lisp to a form of speech in which the consonants and vowels are so distorted that even the parents of the child can seldom understand him. Profound disturbances of personality also often occur.

Causes. Cleft-palate speech may be the result of any one of three causes: imitation; a soft palate that is paralyzed or sluggish or too short; a cleft or opening along the midline of the soft or hard palate or of both palates. The latter condition is frequently accompanied by cleft or hare-lip. Cleft palate seems to have some hereditary factor, and since the speech accompanying it is usually strikingly different, young children who associate intimately with a parent, sibling, or playmate who possesses a cleft palate tend to acquire some of the defective sounds, particularly the nasal snort which is used for the sibilant sounds. Shortness, sluggishness, or paralysis of the soft palate may be due to injury, to the effect of diphtheria or some other infection, to adenoidal cushions which prevented normal palatal movement, or to congenital influences. When the speech dis-

order arises from an actual cleft, the latter is due to embryological maldevelopment. During one stage of the intra-uterine life, the mouth and nasal cavities become separated from each other by the union of two shelves of tissue which meet along the midline to form the roof of the mouth. About once in every 2200 instances, a complete joining does



Fig. 24. Diagram of anatomical structure of a cleft velum. Note the divided uvula.

not take place, and a child is born with some form of cleft palate. Animals also suffer from this failure in embryological development.

Articulatory and phonatory aspects of the disorder. The most common articulatory error is the substitution of some nasal equivalent for the plosive and fricative sounds. The child often forms the lip or tongue position characteristic of the normal sound, but expels the majority of the air stream through the nose. Thus, the *w*, *b*, and *d* sounds have a peculiar *m* or *n* sound blended with them. The voiceless plosives *p* and *t* are usually preceded by a sharp

nasal puff, which dominates and distorts the combined sound. The gutturals *k* and *g* are among the most difficult for the child to make, since it is difficult to create any air pressure behind the tongue when there is an open nasal channel. Some cleft-palate cases contract their nostrils when making these sounds. Others substitute a backward movement of the tongue toward the pharynx or a short sharp puff of air from the true or false vocal cords ("the glottal shock").

Almost all the fricatives are accompanied by a pronounced nasal snort, since narrowing the mouth cavity merely directs the air stream upward and out through the nostrils, which are usually constricted to produce some sort of fricative noise. Many of the more difficult sounds are deliberately omitted. Since lip and tongue movements have little effect on the sound, they are usually sluggish and poorly coordinated. Many vowels and nasals are added to words to prevent too swift a loss of air pressure, and this contributes to the general uncouth sloppiness of the speech. The vowels are very nasal, although generally they can be easily recognized. In some cases, however, even the vowels are badly distorted due to sluggish tongue, jaw, and lip movements. Frequent inhalations are necessary, and phrasing is jerky. Many infantile substitutions are found, since the speech standards are bound to be rather low, and the child often seems so resigned to his fate that he makes no attempt to produce speech that approximates normal standards. Instead, he talks as easily as he can, and hopes or demands that his parents and associates learn his language.

Surgical treatment. Much can be done for the cleft-palate child through surgery if it is attempted early in life. Surgeons still argue about the proper age for operation, some recommending that the repair be accomplished when the child is from two to three weeks old, and others preferring to wait until the second year. The main objection

to early repair is that the tissues do not hold so well; the objection to later operation is that the child has already developed many of his fundamental speech habits, and more reëducation will be required. The trend seems to be in favor of postponing the operation until after the second birthday.

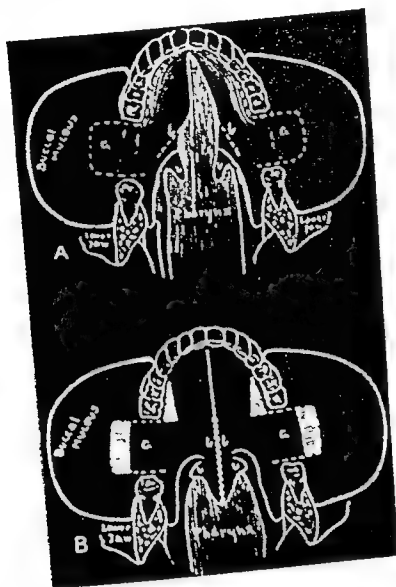


Fig. 25. Diagram showing stages in the surgical treatment of a case possessing a cleft of both the hard and soft palates.

The purpose of the operation is to stop the nasal air leak by closing the open cleft and by lengthening and readjusting the muscular tissue so that the soft palate can be voluntarily activated in shutting off the upper nasopharynx. Clefts in the hard palate are often closed by a dental plate. Various operative techniques are used in lengthening the velum and displacing it toward the rear wall of the throat, and descriptions of them may be found in the references given at the end of this chapter. Since some of the older

operative techniques are very unsatisfactory from the point of view of speech, the surgeon should be chosen with care. It must also be remembered that certain cleft-palate cases present so many difficulties that perfect functioning of the repaired palate is impossible. Occasionally, the surgical repair will clear up the speech defect immediately. However, Kenyon¹ declares: "In cleft-palate patients I have never seen such a completely successful operative result, although I understand that such patients exist." In most instances, speech retraining must be carried on for some time after the operation, treatment usually beginning about two months afterward. In other cases, where the operation is unsuccessful or cannot be performed, an obturator can be used. This appliance is usually constructed of a metal plate which conforms to the arch of the hard palate, a tail-piece corresponding to the normal soft palate in its lowered position, and a bulb at the end of the tail-piece. The pharyngeal wall is constricted about the bulb, and closure is thus effected. Some individuals seem to have much difficulty in learning to use these appliances, while others achieve fairly normal speech with them. In any event, muscle-reëducation and speech training are usually necessary.

Speech-correction procedures. The aims of treatment are: (1) to strengthen the muscles of the soft palate; (2) to teach the child to direct the air stream outward through the mouth opening; (3) to increase the mobility of the tongue, lips, and so forth; and (4) to teach the child to discriminate between the articulatory errors and the correct sounds and to learn to make those that are correct.

Strengthening the soft palate. There are several methods used in strengthening the palatal muscles. One of them is

¹ Kenyon, E. L., "A Suggestion for Coöperation in an Effort To Lessen the Degree of Nasality Found in Cleft Palate Patients," *Proceedings American Speech Correction Association*, 1938, Vol. 8, page 85.

CLEFT-PALATE SPEECH

massage. The massage should be demonstrated by the physician and its amount designated by him. It is usually begun about five or six weeks after the final operation, and three or four short periods are given daily. A sterilized finger cot is placed on the teacher's or parent's forefinger. The hand is held supine, with the flat part of the forefinger in contact with the hard palate. The movement is a sliding one, toward the end of the soft palate. The pressure is slight at first, gradually increasing as the palate gains in strength. The student should then be given instructions to resist the pressure. No attempt should be made to massage the palate when the student has a cold or other respiratory infection, and care should always be taken to avoid gagging.

Another exercise similar to massage consists of placing the finger cot or tongue depressor in contact with the soft palate and requesting the student to break the contact without moving his head or jaw. This is rather difficult at first, but, if yawning is suggested at the same time, the student will learn the movement. By following the palate for part of its movement, the teacher can gradually increase the student's ability to contract the muscles.

Many cleft-palate cases find themselves unable to blow up ordinary toy balloons because the air escapes through the nose, but, if soap bubbles and very thin-membraned balloons are used, the soft palate is unconsciously strengthened. Stiff balloons may also be used by having the student blow them up while holding his nose. He then releases his fingers and tries to keep the air from escaping through his nostrils by raising the palate. It is wise to remove the inflated balloon from the lips, and yawn before reinserting it. If the balloon is returned to the lips at just the proper time, the air pressure will help the soft palate to effect its closure.

Other exercises which are useful are: clearing the nasal passages by velar sucking; repeated swallowing; filling the

cheeks with compressed air without contracting the nostrils; yawning while reclining; gargling; fastening inflated balloons to nasal olives inserted in the nostrils, and attempting to keep the balloons from collapsing when the mouth is opened; panting through the open mouth; and blowing through tubes or constricted air passages against pressure. Whenever possible, these exercises should be used in a reclining position at first; the nostrils must be watched to prevent contraction there instead of at the velar opening; and the tongue should lie as flat in the mouth as the activity will permit.

When working with older children or adults, these exercises may be used as given, but with younger children they must be disguised as games. Frequent shifts of presentation must be made to maintain interest. The adult or older child should understand clearly just what is desired in terms of palatal functioning. By observing the teacher's mouth as she yawns or utters a whispered "ah," and by comparing the action of her soft palate with that of his as seen in a mirror, he will begin to comprehend the nature of his problem. Models of the mouth and nasal passage are likewise useful. Even younger children can be made to understand something of their problem, by telling them about the "little red door to the nose-attic" and using frequent contacts with a tongue depressor or spoon to create a sense of its location. When he realizes that he must shut that door and knows where it is, half the battle is won. Tactual sensations seem to be very effective in provoking movement in younger children.

Directing the air flow through the mouth. The second major aim of cleft-palate therapy is to direct the air stream outward through the mouth. As Young² says: "The center

² Young, E. H., *Overcoming Cleft Palate Speech*, page 32, Minneapolis, Hill-Young School, 1928.

of the child's speech consciousness will be in the nose and will stick there long after the operation." The object of this phase of the treatment is to make the child very much aware of the mouth as the major outlet for voluntarily expired air. Many types of blowing exercises are used for this purpose. Generally, they involve the overcoming of friction or elasticity, the directing of the air stream toward a narrow goal, or the comparison of the amount of nasal or oral air expelled. Some typical exercises are given.

1. Place a sheet of tissue paper against a wall mirror and hold it there by blowing a thin stream of air against it. Be sure not to contract the nostrils.
2. Blow ping-pong balls across a table in a game similar to polo.
3. Play the game of wind-bowling, using paper ninepins.
4. Have a sailboat race, blowing tiny boats across a basin of water.
5. Use an apparatus made with two little platforms, one above the other. This is held in such a fashion that the upper platform is projected outward beneath the nostrils and the lower platform outward below the lower lip. By placing wisps of feather on the two platforms, the student is required to blow the feathers off the lower platform without disturbing the upper.
6. Line up and light three candles. Place about a foot away and six inches apart. Try to blow out the center candle without disturbing the others.
7. Fasten a rubber tube to a nasal olive inserted in one nostril. Insert tube in glass of water. Blow through a soda straw immersed in another glass of water. Hold the free nostril closed and try to blow bubbles with the soda straw without causing any bubbles in the other glass.
8. Place a cold mirror under the nostrils and pant through the mouth without causing any clouding of the mirror.
9. Use whistles, peashooters, pinwheels, horns, harmonicas, and other musical instruments or toys to provide motivation.
10. Puff cheeks and let the air suddenly escape so as to move a strip of confetti held before the mouth.

In all of the above exercises, care must be taken to prevent the nostrils from contracting. This can be accomplished by having the student watch himself in the mirror as he does the task or by using a double-ringed nostril dilator. As soon as the student has learned to do the exercises successfully, he should try to get the same outflow of air through a wider mouth opening. Many cleft-palate cases can learn excellent mouth exhalation through a narrow opening but have more difficulty when the jaw is dropped and the lips are parted. We have found that a large, narrow-necked funnel, padded with sponge rubber, used with a wooden tooth-prop will permit the practice of the above exercises with a wide mouth opening. A small card, held horizontally beneath the nose, from the far edge of which is suspended a feather is another useful device for teaching mouth breathing for speech.

Increasing mobility of articulatory structures. It is also necessary to give a good deal of tongue, jaw, and lip exercise to the majority of cleft-palate cases who have had operations after the speech habits were formed. Many of these individuals seldom employ these articulatory structures in a well-coördinated manner. Instead, they use the tongue to fill space and to block the air passage, causing it to be extremely inactive and sluggish. Lists of these exercises will be found in almost any of the references. Those given in Koepp-Baker's *Handbook of Clinical Speech*, Vol. II, are especially valuable. Whenever possible, the tongue exercises should be performed during exhalation, either silently or when producing a whispered "ah."

Correction of defective consonant and vowel sounds. In teaching the child to apply to speech his newly gained control of the palate and his new habit of exhaling through the mouth, most of the same techniques used in treating the articulatory cases are employed. Ear training is essential, and the teacher should learn to imitate the student's nasal

substitutions for the plosive and fricative sounds, so that discrimination will be easier. At intervals throughout the training period, the student should be required to make the sounds in his old incorrect manner, alternately holding and releasing his nose. In that way, enough variation will be produced to make his errors very vivid. A great deal of work before a mirror, and, in some instances, candid photography, will help to identify the substitutes.

Each period of speech training should begin with a series of "warming-up" exercises, designed to free the tongue and to encourage the student to use an active velum in directing the air stream through the mouth opening. The vowels should be taught first, although perfection in terms of non-nasality is seldom reached. A breathy type of vowel phonation, with some type of nasal check, such as a cold mirror held beneath the nostrils, is usually taught. The vowels should occasionally be given excessive nasality to clarify the contrast. Most clinicians begin with whispered vowels and work gradually up through short intensity stages to normal vocalization.

The first consonants to be taught are the *h*, *wh*, *p*, and *t*. At first they should always be performed in conjunction with the blowing exercises and whispered vowels. The labials can often be taught by modifying the exercise using puffing of the cheeks. The next consonants usually taught are the *w*, *b*, and *d*. In teaching these, the student should select the vowel which is most free from nasality and phonate it breathily as the consonant is attempted, thus producing syllables such as "ooooooooob" or "oooooooood." The tube from the nostril to a glass of water will help to check any nasal air puff which might still occur.

After these consonants have been mastered, reviewed, strengthened, and used in a few familiar words, the *k* and *g* sounds may be attempted. These are usually rather difficult to teach, and some form of phonetic placement is often

required. When the necessity for an oral puff is emphasized, and the sudden lowering of the back part of the tongue is clearly demonstrated, most cleft-palate cases acquire the sounds. Much care is needed to differentiate the true *k* sound from that of the glottal catch, and the ear training should be very thorough. Occasionally a modification of the *ng* (ŋ) sound will produce a good *g*, especially when a series composed of alternate *ng* and *ah* sounds is phonated.

The fricatives and the sibilants tend to cause particular trouble. This may best be overcome by using a very broad, loose fricative at first, one in which no tight constriction of the air channel occurs. The *f*, *v*, *s*, *z*, and other similar sounds may seem rather breathy and sloppy, but they may be gradually modified after the basic idea of expelling air through a narrow or sharp mouth aperture is gained. Often, a series of periods devoted to whistling through the teeth or through narrowed lips seems to hasten the acquisition of these fricative sounds. The nasalized fricatives tend to be made by constricted nostrils, and this must be carefully watched. It is wise to use one of the sounds which the student can make successfully in combination with a more difficult one, since the palate will remain raised for the latter if a quick transition is made. Every agency should be employed to make the student mouth-conscious when speaking.

We have emphasized the type of work necessary in treating the older child or adult, since these individuals are those most frequently met by most speech correctionists. The children whose operations were early and successful usually acquire good speech before they go to school. About all they need is some rather careful teaching of the various speech sounds, similar to that sketched in the chapter on delayed speech, and the exercises for strengthening the palatal musculature.

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We have mentioned that profound personality problems often accompany the cleft-palate child's speech defect. Indeed, they sometimes prevent the teacher from helping the child with his speech. The peculiar speech, the nose-twitchings, and the occasional harelip cause many social penalties and call for a great deal of mental hygiene before any kind of treatment can be instituted. There are also some cases who reach the surgeon or speech correctionist too late, and it is better to teach these individuals an emotional acceptance of their handicap than to attempt to improve their speech. Much depends upon the individual's intelligence, motivation, and patience. Many months are usually needed for treatment, but success is not uncommon.

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A short text which includes many suggestions for the treatment of children with cleft palates. The phonetic placement method for teaching the speech sounds is emphasized.

The Problem of Bilingualism and Foreign Dialect

Since the United States is still the melting pot of the world, a country where large numbers of its citizens converse in other tongues, and where many children still enter its schools without speaking a word of its language, the problem of bilingualism and foreign dialect will always be encountered by the speech correctionist. Research studies indicate that bilingual children are handicapped in the verbal intelligence tests, in reading, and in most of the other school subjects. Adults whose speech betrays their foreign origin or social environment are commonly handicapped in a majority of the ordinary occupations. These individuals require skilled treatment if they are to eliminate their speech difference and handicap.

Aims of treatment. This treatment must accomplish the following things: (1) the student must acquire the words and idioms of a basic English vocabulary, first in terms of comprehension, and second in terms of use; (2) he must learn those English speech sounds which never occur in his other language; (3) he must learn to produce and discriminate between those speech sounds which are common both in his other language and also in English, but which vary in duration, in diphthongization, in nasality, and in other relatively inconspicuous ways; (4) he must learn to hear and produce the characteristic patterns of stress and

accent which distinguish the old language from the new; (5) he must learn to hear and produce the characteristic patterns of melody, inflection, and intonation which differ in the two languages; (6) he must learn to recognize the sound substitutions, omissions, and additions which contribute to the foreign quality of his speech; (7) he must learn the forms of sentence structure which differ in the two languages; and, finally, (8) he must learn to think in English.

Difficulties experienced by the foreign-speaking individual. It is obvious that the treatment of the foreign-speaking individual is not an easy one. Moreover, the task is complicated by many other factors. The spelling of English words is far from phonetic. If the individual has learned his reading and writing skills in some foreign language, he tends to use the foreign sounds whenever he reads or writes, since the associations between vocal and printed or written symbols have already been formed. Many of the sounds used in both languages appear in English words in positions which are unfamiliar. If the individual lives in a home or environment where little or no English is spoken, or where his associates prize their foreign traditions, much difficulty will inevitably occur.

When the non-English-speaking child enters school, he presents a problem which few school systems have been able to solve successfully. In some of the larger industrial cities, special classes are provided for teaching the English language to both children and adults. Many of these special classes, and especially those which can give instruction to small groups within narrow age ranges, are very successful. In too many school systems, the "Americanization" course is so hurried and overcrowded that little is done besides teaching a basic vocabulary of mispronounced words, and, in the majority of schools, all new foreign-speaking students, regardless of age, are compelled to enter the first

grade or opportunity room. Since the teachers are not trained in the teaching of speech, they frequently do little to help. The consequent maladjustment is eloquently expressed in the article by DeVargas, given in the list of references at the end of this chapter.

Treatment of the young non-English-speaking child. When a non-English-speaking child first comes to school, he should be given a few days to orient himself. If any other student can speak his language, the teacher should inform the child through this interpreter that he should watch the other children and do what they do. He should be told that he will not be asked to talk for a little while, and that if he wants to know the name of anything he should attract the teacher's attention and point to it. If possible, the teacher should learn a few of the foreign words and phrases, so that she can say the child's name, "yes" and "no," and such directions as "Come," "Find," and "See," and such questions as "What is this?" These familiar words and phrases will get rid of the overwhelming insecurity which usually greets the foreign child upon entering school. For several weeks, the child should not be asked to make any attempts to say English words, but every opportunity should be provided for increasing his comprehension. Pantomime, pointing, and the use of pictures, when preceded by the speaking of their names by the teacher or some other student, often build up this comprehension to a surprising degree. Some teachers designate one of the other pupils to act as a talking dictionary several times a day and to name anything the foreign child dramatizes or to which he points. Such a program will invariably result in spontaneous speech attempts and in imitation. The other children often carry out similar procedures on the playground, and most of the language is acquired through play activity. The teacher should try to have a five- or ten-minute period each day in which she attempts to get the child to hear and produce

those speech sounds which the foreign language does not possess or which it uses in a slightly different way. These sounds should be identified with noises made by animals or machines, and should be practiced independently of any true speech.

As soon as the child begins to use English speech spontaneously, the teacher can begin to build vocabulary. She should not be too critical of pronunciation at first, but, after the child has used the new word five or six times, she should point out the errors in contrast with the correct sounds, using the phonic training mentioned in the last paragraph to enable him to correct himself. Each new word should be presented in many different contexts and should be reviewed frequently. In order to prevent too narrow associations, each should be used as soon as possible with other contrasting words, such as opposites or different actions. Sentence words should be the first to be acquired, and some other child may demonstrate their meanings by his actions as the teacher repeats the new word. Pictures of children carrying out commands or directions are also useful. Often, the foreign child seems to make rapid progress by imitating the activity of the other members of a group of children as they respond to the teacher's spoken commands. Articles, prepositions, and abstract words should be introduced much later, and many of them can best be learned through indirect methods. Thus, the foreign child learns the words "on" and "under" by following directions to put objects on or under a given table. The teacher must always remember to use as simple directions as possible, employing one word sentences and pantomime in the early stages so as not to confuse the child with too many words. She must also realize that the child thinks in the other language and must mentally translate everything said to him, a process which, in the young child, necessitates patient waiting for a response.

Although the average child has a vocabulary of approximately 2000 words before beginning reading, no such amount need be required of the foreign child. In fact, after a small basic vocabulary of fifty or one hundred words has been acquired, the foreign child should be given reading as part of his speech training. The words included in modern elementary readers are probably as basic to language acquisition as any which may be found. Pronunciation of the difficult words found in reading should be handled apart from the reading situation if the reading skills are not to be affected. Those words which the foreign child mispronounces in oral reading should be noted and corrected later. As soon as some reading skill has been gained, the words of the foreign child's new vocabulary should be reviewed over and over, and incorporated into little stories. He should be encouraged to tell these before the group, and social approval should be given for each little triumph. We doubt that phonetic symbols are of much use in training the young foreign-speaking child; they merely increase the already heavy burden which school places upon him. We feel that any child of ten years or less, if given the proper preliminary help, will acquire normal English speech from his fellow students. Once the process of correct speaking is initiated, imitation seems to take care of even the stress and inflection aspects of the problem, providing environmental factors do not interfere. The teacher should help the child keep a notebook of his most frequent errors; this can be passed along from teacher to teacher as he progresses through the grades.

The speech problem of the adult with foreign speech or accent. In treating the adult whose speech is marked by foreign accent or who has no English speech, more difficulty will be experienced and more strenuous techniques will be needed. It is usually wise to teach him the use of the phonetic alphabet, the rules of accent and stress, and the

methods for following speech melodies and inflections according to some arbitrary system of scoring. One of the most useful texts for teaching phonetic transcription to foreigners is that by Barrows, given in the references at the end of this chapter. In teaching phonetics to foreign-speaking individuals, much care is needed to get acceptable English sounds associated with the symbols. For this reason, phonetics should follow training in the production and discrimination of the individual English speech sounds.

Vocabulary. If the student has very little vocabulary, it is usually wise to give him the most common and useful words. Ogden's *Basic English* provides an excellent vehicle for vocabulary building. The word lists by Thorndike or by Buckingham and Dolch will insure economy of effort, since each word is listed according to frequency of use. The study by Hughes gives a list of 660 words used in teaching Spanish-speaking children their first English vocabulary. Whatever word list is used, the teacher and student will need to supplement it with those words which are peculiarly useful in the latter's immediate environment. As far as possible, the words should be taught vocally rather than by reading or writing. Phonograph recordings can serve as sound dictionaries, if phonetic transcripts are provided with the records. This method has proved very useful.

Each student finds it very helpful to make his own vocabulary recording. After learning a series of words and how to transcribe them phonetically, he and the teacher pronounce them alternately into the microphone of a recording device, pausing for a second after each word. When the record is played back, the student can hear his own pronunciation, then the teacher's, and then is given time to pronounce it again before the next word is spoken. A series of these records, frequently replayed, is a very effective therapeutic device. Foreign-speaking students also make special recordings of those words they are most likely to

mispronounce, saying them both correctly and incorrectly. These dictionaries of error, when replayed daily, soon eradicate the mistakes. The students also are urged to keep notebooks in which they note all usage of familiar words which seems to violate the meanings previously taught.

Errors in producing the English vowels and consonants. No great difficulty will be experienced in teaching the foreign-speaking individual how to produce those sounds which do not occur in his other language. They may be taught by the same methods outlined in the chapter on the treatment of articulatory defects. Probably the greatest obstacle lies in the average teacher's unfamiliarity with the student's language. Fortunately, the omissions, additions, distortions, and substitutions of sounds commonly made by each nationality are to be found in most of the standard textbooks in speech correction. The text by Borden and Busse is especially valuable in this regard.

Since many teachers may not have access to the material recommended above, we give a brief summary of the English sounds which are not found in the French, Italian, German, Hebrew, Spanish, Scandinavian, and Slavic languages.

<i>Missing Sound</i>	<i>Languages</i>
<i>wh</i> as in why	G, F, I, Sp, H, Sc, Sl
<i>w</i> as in water	G, I, H, Sc, Sl
<i>th</i> as in thin	G, F, I, H, Sc, Sl
<i>th</i> as in that	G, F, I, H, Sc, Sl
<i>j</i> as in joke	G, Sp, Sc
<i>ch</i> as in chip	F, Sc
<i>h</i> as in hope	F, I
<i>z</i> as in zero	Sp, Sc
<i>sh</i> as in sheep	Sp
<i>zh</i> as in azure	Sc
<i>r</i> as in rat	F, I, H, Sc, Sl
<i>ng</i> as in thing	I, Sp, H, Sl
<i>u</i> as in but	G, I, H
<i>oo</i> as in hook	F, I, Sp, Sc, Sl

Missing Sound

ɔ:	a	as in paw
æ	a	as in cat
ɪ	i	as in pit
eɪ	a	as in mate

G, I, Sp
G, H
I, Sp
F, H, Sc

Generally speaking, there are few consistent substitutions characteristic of the individuals of any one nationality who are attempting to learn English. Some omit the sound entirely; others use some native speech sound similar to the English one; still others give the symbol the foreign equivalent and use the latter in pronunciation. A keen ear can soon detect what the errors are.

It is usually more difficult to teach the foreign-speaking adult to distinguish those characteristics of duration, diphthongization, nasality, and force which differ in the old and new languages. Phonetic training will help him recognize the natural tendencies in American speech to prolong and to diphthongize the vowels. English vowels are not pure vowels, but are diphthongs or triphthongs. Americans ordinarily use very little lip or jaw movement in articulating their vowels or consonants, and when the foreigner's stop consonants are too plosive or too energetic, they contribute to the foreign accent. Many foreign languages use trilled r sounds and produce the l with a retracted tongue. Others, notably the French, nasalize many of their vowels and voiced continuant sounds. All of these differences reflect themselves in foreign accent and must be eliminated if the individual is to lose his speech peculiarity. This may be done through discrimination and ear training similar to that used for the voice and articulatory cases. The errors must be brought up to consciousness, the old habits broken, and new habits substituted for them. The use of narrow phonetic transcription, which employs symbols indicative of vowel duration, tongue position, and nasalization, is often

very effective. Matching techniques, contrast of correct and incorrect sound sequences, practice in drawling and prolonging vowels, reading prescored material, and many other methods are useful in carrying out these aims.

Stress. Foreign speakers habitually use those stress patterns and accents which are characteristic of the old language, and often find themselves hopelessly confused by the tremendous variety of syllabic accents found in English. It is usually wise to teach the student two or three rules and then ask him to collect and record exceptions in his notebook. The rules which we have found most useful are these:

1. In English, we tend to alternate stressed and unstressed syllables.
2. Words of three or more syllables are accented on the first syllable except when it is a prefix.
3. Compound words are accented on the first syllable.

Melody. Probably the most difficult of all characteristics of foreign speech to eradicate in acquiring English is the old melody pattern of the sentence. Each language has its own system of inflection patterns, and, since they are not usually recorded by symbols, they are relatively unconscious and hence difficult to eliminate. The Swedish individual tends to end his declarative sentences with an upward inflection. If he is to free his English of peculiarity, he must recognize this tendency, reject it, and substitute the down glide which is normal to the new language. Three rules are useful in teaching the principles of English intonation:

1. When you ask a question without using a specific interrogative word such as *what* or *when*, use a rising inflection on the last word.
2. When you finish a thought, use a falling inflection on the last word.
3. For unfinished thoughts, as found in dependent clauses or

unfinished commands or statements, use a rising inflection on the word before the pause.

It is difficult to hear inflection patterns unless some motor performance is used to identify and record them. Many systems have been devised for this purpose. Klinghardt's system is clearly described in the reference by Koepp-Baker. Another is described in that by Bender and Kleinfeld.

Phonograph recordings are invaluable for this part of the work, and the student should imitate the instructor through a wide range of inflection variations. Phonograph records can be used as models for inflection transcription, and, after the technique has been mastered, the student can be given his own record to analyze in similar fashion. When the student can hear, analyze, or record the inflections of others, and can read from transcriptions of inflections, he has progressed a long way toward the solution of his problem.

Sentence structure. Errors in sentence structure are usually eliminated through two methods. First, the grammar of both the old and new languages is studied intensively, and all instances of contrast are noted and discussed with the instructor. Other examples of each variant word order are collected. It often helps to practice the English word order in the foreign language, since this seems to vivify the experience. Secondly, the student collects and frequently reviews all phrases and sentences which he considers odd or idiomatic. After checking with the teacher, the student enters speech situations appropriate to the employment of the sentences concerned.

Thinking in English. Enabling the student to think in English may seem an almost hopeless task at times, but, after the preliminary steps have been mastered, penalties can be placed upon translation, and through such devices as oral reading and rapid speech the student actually manages to make the shift. At first, this training in English

thinking should be given in very small doses and only under the guidance of the instructor, since much verbal and mental confusion can result from this type of speech conflict. If the thinking in English is carried out entirely in one situation, it tends to produce no such conflict, and later on a gradual spread to other situations occurs. Acquiring perfect English after one is an adult is no easy task, but, with patience and intelligent direction, it can be accomplished.

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